

GARDAR G. VIBORG

STUDIES IN
THE DEVELOPMENT OF
SOCIAL-BEHAVIOR UNDERSTANDING

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Abstract The dissertation deals with the development of social-behavior understanding, and consists of four reports and a summary. The summary begins with a short introduction to the fields of social cognition in children, followed by summary of the four studies upon which the dissertation is based. These reports deal with the understanding of social behavior in children aged five to nine. The first two concern the manner in which children describe and explain behavior, the third examines children's interpretation of interpersonal behavior, and the fourth deals with children's ability to identify and coordinate inconsistent behavioral and expressive cues in pretense behavior. The results show that there are important developments between the ages of six and eight, that mark the onset of a form of social decentration containing an increased ability to operate with multiple social stimuli.		
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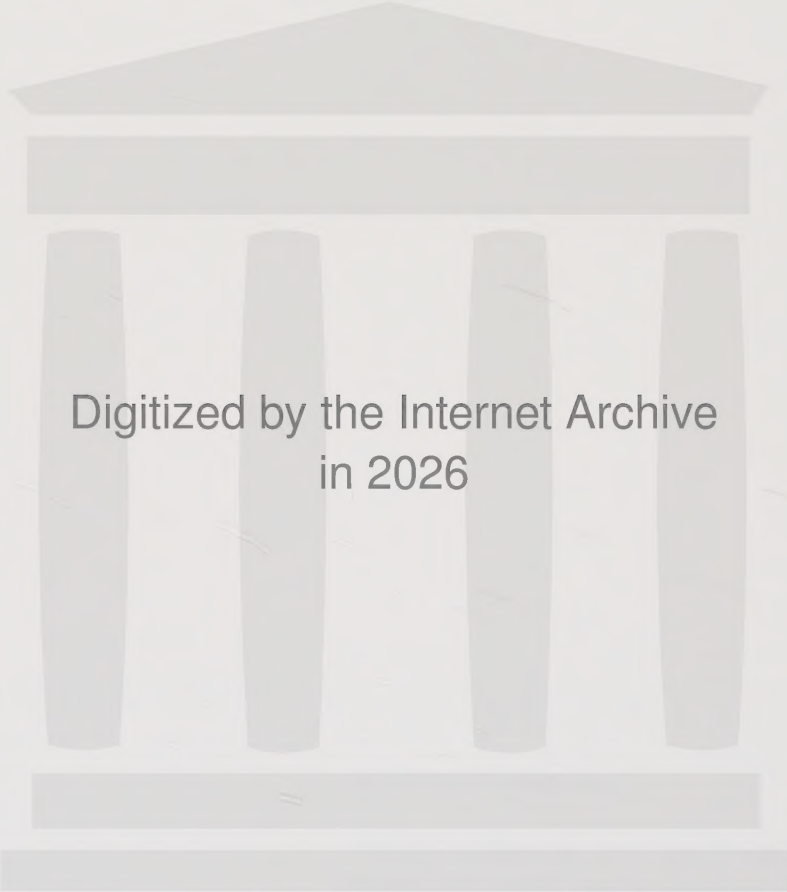
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BLOMS BOKTRYCKERI AB, LUND 1984

To
My parents

A c k n o w l e d g e m e n t s

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Lund, April 1984

Gardar G. Viborg



The dissertation is based on the following four reports, referred to in the text by Roman numerals:

- I. Viborg, G.G. The child as an observer of social situations.
Psychological Research Bulletin, Lund University, 1982, 22, 9.
- II. Viborg, G.G. Developmental changes in social behavior description in children between the ages of five and nine. Unpublished manuscript.
- III. Viborg, G.G. Young children's understanding of interpersonal behavior. Psychological Research Bulletin, Lund University, 1983, 23, 10.
- IV. Viborg, G.G. Children's identification and coordination of inconsistent behavioral and expressive cues in pretense behavior. Psychological Research Bulletin, Lund University, 1984, 24, 1.

I n t r o d u c t i o n

Arriving in the world with no knowledge of people, children eventually come to differentiate social and non-social stimuli, and then to form expectations about the motives, feelings, and behavior of people. It is clear from earlier research that the formation of expectations about people's behavior begins during the first year of life and is paralleled by the development of concepts of people (Lamb & Sherrod, 1981). From about three years of age, when children become able to grant people intentions and motives (Keasey, 1978), there is a growing ability to make inferences about psychological aspects within other people (Glick & Clarke-Stewart, 1978; Flavell & Ross, 1981).

The process by which children acquire knowledge about people and social relations, and the manner in which they reason or make inferences on the basis of this knowledge, is referred to in psychological literature as "social cognition". Flavell defines social cognition "as any sort of cognition that takes human psychological and social phenomena as its object" (1977, p. 43). On the basis of Flavell's broad definition, social cognition includes at least three major research areas. One important area is "role-taking" or children's ability to adopt mentally the roles or perspectives of other persons. The term role-taking was initially coined by Mead (1934) to denote the ability to understand oneself and others as subjects, to react to others as to oneself, and react to one's own behavior from the other's point of view. Secondly there is "causal attribution", focussed on children's ability to make causal inferences about social behavior (see Sedlak & Kurtz, 1981, for a review), and, thirdly "person perception" concerning the manner in which children describe and conceptualize other people (see e.g. Livesley & Bromley, 1973).

According to Shantz (1975), the foci of empirical work on social cognition have been on (1) what the other is seeing; (2) what the other is feeling; (3) what the other is thinking; (4) what the other is intending; and (5) what the other is like.

Social cognition is distinct from the type of cognition that is only concerned with inanimate objects in the environment, here called "object cognition".

Piaget (1950) claims that the development of object cognition and social cognition is structurally parallel. In his work Piaget has dealt primarily with object cognition, but he has also studied such questions within the sphere of social experience as moral development (Piaget, 1932) and perspective-taking (Piaget & Inhelder, 1956). Of special interest to social cognition is his theory of egocentrism and the process of decentration.

Most studies on the development of social cognition use Piaget's theory as a frame of reference and tend to emphasize the similarities or dissimilarities between children's cognitive capacities in dealing with their social and physical worlds.

Shantz (1975), who reviewed empirical work on the subject, states that there appears to be a general relationship between social cognitive skills and logical operations, but points out that it is not yet clear what particular logical abilities relate to social cognition.

In recent years there has been a growing tendency among investigators in the field to view the two types of cognition as distinct and fundamentally different. Glick (1978), for instance, views the two as substantially different, and holds that object cognition and social cognition must operate under different rules - the former concerning an organization of the world according to a set of physical laws, and the latter concerning psychological principles and social conventions.

The aim of the present work

The focus of the present work has primarily been on an aspect not included by Shantz - viz. "what the other is doing". The theoretical assumption held here, derived from Heider (1958), presupposes that the understanding of the behavior of others involves inference making about such inner psychological entities as motives, intentions, thoughts, and feelings, on the basis of both behavioral and situational cues. Thus, our question of "what the other is doing" must be viewed in relation to the five aspects listed by Shantz. It was assumed, therefore, that there must be a correspondence between children's social cognitive abilities and the manner in which they assign meaning to behavior.

This study, then, deals with children's understanding of behavior in interpersonal situations, how this understanding changes with increasing age, and whether there is any correspondence between such changes and those already found in children's role taking, causal attribution and person perception. The present approach is an attempt to study social cognitive processes from a new angle - that is, from the understanding of social behavior, a process in which the interpretation of behavioral and situational cues is here held to be fundamental. The work has been undertaken with a view to adding to our knowledge of social cognition in general and of its development in particular. Although general comparisons are made between the development of object cognition and that of the understanding of behavior, specific relationships between the two have not been the concern of this thesis.

B a c k g r o u n d

As mentioned above, our knowledge of the development social cognition derives from three main areas of research, whose relevant empirical work will be briefly reviewed before a summary of the present studies is presented.

Causal reasoning in childhood

According to attribution theory (Heider, 1958; Kelley, 1972, 1973), people rely on different causal schemata or principles in attributing causes to social behavior - the causes being either personal or environmental or both. The individual is said to develop causal schemata which serve as a repertoire of abstract ideas about the operation and interaction of causal factors, and which help the individual to make causal inferences about the social world. Since the theory emphasizes cognitive factors, it also assumes that the application of causal schemata varies with cognitive development.

Research on causal attribution in children has shown very young children to be able to view human behavior in causal terms. Keasey (1978) found that three-year-olds were capable of viewing people as having motives and intentions. According to Sedlak & Kurtz's (1981) review on children's use of causal inference principles, however, children under seven appear to have trouble

in applying multiple causal reasoning, unless the situation is simple and the causal factors explicit and mutually related. During their elementary school years, children's application of causal principles develops considerably, and they become able to reason in terms of multiple causal relations. There seems to be a fundamental difference between preschoolers and elementary school children in their causal attribution strategies. Sedlak and Kurtz (1981) suggest, as do most other researchers in the field, that there is a connection between the application of causal principles and logical operations; because young children's pre-operational thought is limited, so is their causal reasoning, it is assumed.

One important study showing evidence of this fundamental difference between preschoolers and elementary school children is that of Karniol and Ross (1976) on the development of the "discounting principle". This principle states that, if an effect occurs in the presence of one cause, inferences about an alternative cause, are not made. The attributor discounts the alternative cause when a sufficient explanation is already available.

Karniol and Ross's subjects were kindergartners, first and second graders, and college students. They were presented individually with stories about children helping someone in the presence or absence of an external causal factor, a reward or a command. Each story concerned a pair of children, one of whom, for instance, was offered a reward, for helping in some way, while the other helped without being offered a reward. From each pair of story characters, subjects were to select the child they thought most wanted to help. All but the kindergarten children applied the discounting principle, implying that the story character receiving no external approval or command was judged to be motivated more by intrinsic factors than one receiving such external controls. The kindergartners, however, considered the character's internal motivation for helping to be enhanced by the presence of external causal factors - a principle Karniol and Ross called "the additive principle", or "the additive rule".

Karniol and Ross (1979) suggest that children using the additive rule may do so for any or all of three categories of reasons. In the first category, the child is said to be unaware of such psychological entities as manipulative intentions on the part of an outer person who, for instance, offers a reward, and thus fails to interpret the offer of reward as a possible

alternative cause. In the second category, the child is said not to realize that the offer of reward implies manipulative intent on the part of the donor. In the final category, it is said that the child does infer manipulative intent and yet, for some reason, does not discount for intrinsic motivation.

Studying causal reasoning in children as a function of the consequences of helping behavior, Cohen, Gelfand, and Hartmann (1981), came to much the same conclusions as Karniol and Ross, but suggested that, while the inference of manipulative intent is a prerequisite for discounting, it does not completely explain it.

Further evidence of the difference in causal reasoning between preschoolers and elementary school children has been reported by Kun (1977), who studied achievement attributions. Kun found that a causal inference schema, which he termed the "inverse-compensation schema", was not fully developed before the age of nine, and was thus absent among preschoolers. This schema implies that, "if an effect (success) remains invariant, change in the strength of a facilitative cause (effort) is negatively related to change in the strength of some other facilitative cause (ability)" (p. 862). The preschoolers, instead of using the inverse compensation rule, applied the "halo schema" which implies that, when faced with effort/ability judgment task where two persons perform equally well, the person with more ability is judged to use more effort. Preschoolers infer a positive correlation between effort and ability at a constant level of performance, whereas older children infer a negative correlation.

Kun (1977) also found evidence of causal inference schemata applied by children as young as five years old. One such schema is the "magnitude covariation schema", which implies that more extreme levels of effects are associated with high levels of facilitative causes. This schema is fully developed at the age of five. Another schema is the "direct compensation schema", which implies that, in the case of a fixed level of effect, change in the strength of an inhibitory cause, such as task difficulty, is followed by a compensating change in the alternative cause in terms of either ability or effort. Though present among preschoolers, this schema is not fully developed before the age of nine.

Another causal principle of which preschoolers are capable was studied by Kassin and Lowe (1979) in kindergarten, second-grade and fourth-grade children. This principle, called the "augmentation principle", parallels discounting but is used in situations containing one facilitative and one inhibitory cause. According to this principle, the presence of an inhibitory cause augments the reliance placed on the facilitative cause, whereas the absence of an inhibitory cause is followed by a weakening of the emphasis placed on the facilitative cause.

Subjects were shown animated films portraying the movements of geometrical shapes. For example, two triangles were shown moving towards a house located in the center of the screen, one triangle approaching from the left, the other from the right. In the first experiment, one of the triangles was to encounter an obstacle on its way to the house, while the other could move freely, unimpeded by any external inhibitor. In the second experiment, both triangles were to encounter external obstacles, but which differed in magnitude - one triangle encountering a small obstacle, the other a large one. After each film, subjects were to judge which of the two triangles most wanted to reach the house, and state the reasons for their choice. The first experiment constituted a comparison of effects in the presence or absence of an inhibitory cause. Most subjects considered the triangle unimpeded by an external obstacle to have greater internal motivation than the triangle moving freely. There was no difference between the three age groups, indicating that all children tested applied the augmentation principle. With regard to the explanations for their judgment, however, the age groups did differ, the kindergarten children being unable to identify the external inhibitor as a cause of greater internal motivation. In the second experiment, kindergartners did not apply the augmentation principle, second graders showed a tendency to do so, and fourth graders did so without difficulty.

The conclusion drawn was that, from the age of five, children understand that, the end result being comparable, the contribution of a facilitative cause is influenced by the absence or presence of an inhibitory cause. All children tested recognized the existence of a correspondence between facilitation and inhibition, but kindergartners were unable to cope with differences in magnitude of facilitative and inhibitory causes.

Instead of "additive rule", Sedlak and Kurtz (1981) prefer the term "augmentation error". In their view, young children use the augmentation principle in problems that, in older children, evoke the application of discounting. They are critical of Karniol and Ross's (1976, 1979) explanation of young children's causal reasoning. According to Sedlak and Kurtz, Karniol and Ross's method does not account for unsystematic errors made by preschoolers nor does their view explain the findings of Kun (1977) regarding the "halo schema", where two internal facilitative causes are involved instead of one internal and one external. Sedlak and Kurtz suggest two alternative explanations for the additive rule. The first, they call "cause-effect syncretism", in which the younger child is said to view the two causal factors as undifferentiated, rather than independent as the older child considers them. Therefore, activity resulting in reward is considered more attractive than activity that is unrewarded. Augmentation errors emerge, as activities that are more attractive are associated with greater intrinsic motivation. The second is "correlation decentering" and concerns inferences about ability and motivation - two factors subjects assume to be positively correlated. Young children are unable to change this assumption even though the outcome in fact points to another assumption. Thus, augmentation error occurs. These explanations are in accordance with the Piagetian view.

To sum up, it is evident that, from the age of five onwards, children reason in causal terms about human behavior, and that their application of causal principles develops considerably during their elementary school years. It is not until the age of about seven to nine that children become adequately proficient in the multiple causal reasoning involved in the use of the principles of discounting and inverse compensation.

Most of the empirical work done in this field has been too limited in two major aspects: Firstly, research has been concerned only with a limited number of causal schemas, known to be used by adults, instead of studying children's social causal reasoning in natural settings; and secondly, that research has been concerned with the why of actions only, rather than with what actions are perceived in the first place.

Heider (1958) emphasizes two major aspects of social perception. The first concerns the perception of what an observed person is trying to do - i.e., his intentions; the second concerns inferences about why an observed person

performs a given action. The second of those aspects has been the principal focus of attribution research, while the first has been largely neglected.

Person perception in childhood

Although research on person perception has been primarily concentrated on how adults see and evaluate other persons, some important studies have been conducted at the developmental level in children. Livesley and Bromley (1973), who investigated developmental changes in person perception in childhood and adolescence, found that the number of dimensions along which the child can conceptualize other persons increases throughout childhood, and results in improvement in the child's ability to differentiate between different characteristics in the same person. The developmental tendency is a transition of focus from physical aspects such as appearance and overt behavior, to such psychological aspects as disposition, values, and beliefs. This change of content in the children's descriptions they found to be most marked between the ages of seven and eight. Between the ages of eight and twelve, with rapid growth in psychological vocabulary, conceptualization became more differentiated into more specific and precise terms. Between the ages of twelve and thirteen, this growth in psychological vocabulary slowed down and its frequency tended to level out, though the use of organizing and qualifying material continued to increase. Livesley and Bromley explain this developmental trend by referring to the increased ability of the child to cope cognitively with his environment. The watershed around the age of seven is judged to be a consequence of the child emerging from egocentrism and adopting operational modes of thinking. The child becomes capable of inferential thought, and applies his growing powers of abstraction and generalization, penetrating beyond the immediate stimulus situation to infer stable and constant features in a person's behavior. The changes that take place after the age of thirteen are explained as a result of the development of more complex cognitive structure.

Barenboim (1981) has studied the developmental sequence of person perception processes. His findings indicate that the development goes from behavioral comparisons to psychological constructs to psychological comparisons. He found that the use of behavioral comparisons in person description increased significantly between the ages six and eight, and then decreased between the ages of nine and ten. The use of psychological constructs was

found to be almost nonexistent before emerging at the age of about seven or eight, after which it increased rapidly until about the age of ten or eleven. The use of psychological comparisons was negligible before the age of ten or eleven, but became more and more frequent after that age. Barenboim claims that the results support his hypothesis about the causal link between behavioral comparisons, psychological constructs, and psychological comparisons. Behavioral comparisons are said to lead to the creation of psychological constructs, which in turn lead to the use of psychological comparisons. In other words, children begin by describing others by comparing them along behavioral dimensions. This eventually leads to the child's creation and use of inferred, stable, and dynamic attributes about others. Having reached this level, the child then becomes able to compare persons along psychological dimensions. It is Barenboim's view that the use of psychological comparisons may be fundamental to the development of implicit personality theory. The proposed developmental sequence of person perception processes is, he asserts, quite compatible with Piagetian theory.

Person perception research tells us that, with regard to the differentiation of personal characteristics, the development of person perception progresses from physical aspects to psychological aspects, the decrease of physical terms used, and the increase of psychological terms, being most noticeable at the age of about seven or eight. The increased use of psychological terms tends to slow down between the ages of twelve and thirteen, when increased use begins to be made of organizing and qualifying material. Person perception research indicates, that children under seven do not refer to a person's disposition, values, or beliefs, except in a very general sense with regard such broad categories as 'good' or 'bad'.

Role-taking in childhood

Feffer (1959) and Feffer and Gourevitch (1960) developed a theoretical approach aimed at extending the Piagetian theory of cognition in the interpersonal world into the domain of interpersonal relations. Their basic concern was with decentration, which in the cognitive structuring of social content is revealed in role-taking activity.

Their method consisted of a few traditional Piaget tasks and a role-taking

task (RTT), which is described as follows: "The RTT is a projective task initially based upon Schneidman's Make a Picture Story (MAPS). The test material selected from the MAPS consists of a series of background scenes picturing various locales and a variety of figures of men, women, children, and animals which may be placed in the scene. With the above materials, the S is asked to tell a story for each of two background situations using at least three figures in each story. After completion of the two stories he is again presented each background situation along with the actors he has selected for that particular background. Each story is reviewed for him by the examiner to dispel the possible impression that his memory is being tested. He is then asked to retell his story as it would appear from the point of view of each of the actors, i.e. to take, in turn, the role of each actor (Feffer & Gourevitch, 1960, p. 385).

Feffer & Gourevitch ordered role-taking behavior into three categories in terms of degree of balanced decentration: (1) Simple refocusing, which is a relatively inconsistent decentration characterized by lack of coordination between perspectives. (2) Consistent elaboration, where there is more continuity between perspectives than in the former category. (3) Change of perspective, which is characterized by a simultaneous coordination of perspectives.

According to Feffer and Gourevitch, the pre-operational child, with his lack of equilibrium between assimilation and accommodation, fails to coordinate perspectives. At this stage, the child describes the perspective of an actor in Feffer's RTT without relevance to the original story. The ability to decenter gradually emerges as the child becomes able to view an actor's perspective without completely losing track of the original story. Application of this emerging ability is at first limited to one actor only. In the second category, consistent elaboration, the child is capable of describing the perspectives of two actors, in a manner consistent with the original story, while maintaining a certain degrees of continuity between the two perspectives; this continuity being limited since the perspective of another person in the scene does not, of course, include his impression of the appearance and behavior of that other person. In the third category, the child becomes capable of simultaneously viewing the different perspectives of several actors and of coordinating them, being aware that each actor has his own frame of reference and his own world of experience.

Like Feffer researchers in the field of role-taking have based their work on the Piagetian model with its emphasis on structure and stages or levels of development. Most research indicates that there is a general correspondence between children's role-taking abilities and Piaget's cognitive levels, with regard to the trouble preschoolers have in differentiating and coordinating multiple perspectives and aspects of a situation. This does not mean that preschoolers are utterly unaware of other people's perspectives or views; on the contrary, evidence has been found that they are capable of affective, cognitive and visual perspective-taking quite early (as will be briefly reviewed later), so long as the stimulus situation is simple and age-appropriate. As the stimulus situation becomes increasingly complex, the young child fails more and more often. This challenges the strict Piagetian view that non-egocentric perspective-taking is not attained before six to eight years of age. For example, Eliot and Dayton (1973) assert that children make egocentric errors rather because of task complexity or unfamiliarity with perceptual tasks, than inability to take another person's perspective. Nevertheless, findings have been reported, that indicate a shift in children's ability to coordinate perspectives and to make inferences about psychological elements at the ages of six to eight, as would be expected according to Piaget's theory.

Let us now review some empirical work on the subject. Borke (1971) found the general trend for social sensitivity, as she calls it, to increase with age. According to Borke, her results suggest that the increase in sensitivity varies greatly dependent on the emotional response being identified. Awareness of happy feelings in other people seems to be well established as early as at the age of three or four. The awareness of fear reactions does not seem to be adequately developed until the age of four or five. Borke explains these differences by reference to the everyday life of the children, where happy reactions are more frequent than fear reactions. Borke concludes that children as young as three years old are aware that other people have feelings, and that these feelings vary according to the situation in which the individual finds himself.

Chandler and Greenspan's results (1972) are consistent with those of Borke - i.e., that children under six years of age are normally aware of other people's feelings. On the other hand, when the subjects were required, not only to identify the emotional reactions of a story character, but also to

demonstrate their perspective-taking skill by adopting roles or points of view, Chandler and Greenspan's results differed sharply from those of Borke.

The test used by Chandler and Greenspan consisted of cartoon stories, divided into two sections, being shown to subjects in three main stages of the study as follows:

- (1) The first cartoon section depicted an affectively charged situation arousing a feeling of either anger, fear or sadness in the story hero. (This is much the same as Borke's procedure.) Having seen the cartoon section, the subject was asked to identify the feeling(s) of the story hero.
- (2) The subject then began to watch the second cartoon section, in which the story hero is shown behaving in a manner consistent with his affective state.
- (3) While the subject was watching the second section, a child "assistant" entered the testing area and also witnessed the hero's affective states, though being unaware of their earlier situational background. The subject was asked to describe what happened from his own point of view, and then from the point of view of the other child.

The main issue here is whether the subject can set aside his own perspective and take the role of another who has less information about the situation. 85% of the six-year-olds were not able to complete this task without error.

Chandler and Greenspan (1972) were critical of Borke's interpretations, their own view being that non-egocentric thought is not simply a synonym for accurate social judgment but implies the ability to anticipate what someone else might think or feel, even when those thoughts and feelings differ from one's own. Chandler and Greenspan claim that Borke's procedure fails to make this distinction at all.

Chandler and Greenspan claim that identifying an emotional reaction in another person is not a question of taking the point of view of another person, but of anticipating how another person might feel in a given situation.

The different views presented here are very central to work in this field, and are pertinent to the aims of the present study. Clearly Borke and Chandler and Greenspan do not share a common definition of perspective taking. Chandler and Greenspan (1972) claim that skill in perspective-taking is a prerequisite for social comprehension and is thus a developmental accomplishment appearing relatively late. Borke (1971, 1972), on the other hand, views the development of social sensitivity as a continuous process, rather than as a discontinuous stepwise process, as suggested by Chandler and Greenspan. According to Borke, the perspectivistic thinking of the adolescent with the ability of accurate perspective-taking is just one level of a complex developmental process, which begins with the young child's sensitivity to the emotions of others. Subsequently, this process becomes even more complex.

It is worth noting, however, that Borke's study deals with the relationship between one situational element and one state of feeling, whereas Chandler and Greenspan's study deals with the relationship between a multiple situational context and multiple perspectives. Thus, their separate views are not so much mutually contradictory as representative of two distinct developmental levels of social cognition.

More recently, research has been concerned with the developmental sequence of social cognition, and it is now generally accepted that both Borke's findings and those of Chandler and Greenspan reflect two aspects of the same developmental process, but there has been controversy about the definition of genuine role taking and at what point in development the onset of role-taking occurs.

Selman and Byrne (1974) attempted to define the development of social cognition according to "an ontogenetic sequence of structures", as they call it, the structure or form that the developmental process takes being said to determine which conceptions of others emerge. They divide the development into four levels: The first, egocentric role-taking, implies that the child can differentiate himself from others, but not that he can differentiate their viewpoints from his own. This form of social cognition is predominant among four-year-olds. The second level, subjective-role taking, implies that the child is able to differentiate self and others in a broader way than before, and now understands that self and other can differ in their

view of the same situation depending on the information received. The child is still unable to maintain his own perspective and simultaneously put himself in the place of another person. Nor can he judge his own actions from their viewpoint. This form is predominant among children at the age of sex. The third level is self-reflective role-taking. The child now realizes that each person has his own set of values, and thus his own perspective that may differ from those of others. The child can view his own behavior from the viewpoint of others, but this is limited to a dyadic relationship. The last level, mutual role-taking, is characterized by the acquisition of the ability to differentiate one's own perspective from the generalized perspective of some representative member of a particular group. The child can view the others point of view at the same time as he views his own. He is capable of mutual role-taking. Selman and Byrne equate their structural forms of development with Piaget's stages - their egocentric role-taking level with his pre-operational stage, their subjective and the self-reflective levels with his concrete operational level, and their mutual role-taking level with his formal operational thought.

Urberg and Docherty (1976) share the view held by Borke (1972) that it is necessary to consider both content and structure when dealing with inferential tasks. A subject who is being asked to infer an emotional response must both have the concept of that affect in his cognitive repertory, and also recognize what situations would produce that affect. Regardless of his level of inferential ability, without a content knowledge of the situation, the child will fail in an inferential task about a person's reactions within that situation. Urberg and Docherty suggest that Borke's task reflects the basic content required for role-taking. They conclude:

"... role-taking was shown to be a progressively developing skill. When the concepts to be inferred and the situational cues used in the inferences are within the child's cognitive repertory, the type of decentration required for the task seems to be the limiting factor in young children's role taking ability. Thus, when the task can be solved by sequential decentration and the content is simple, children as young as three are able to recognize the viewpoint of another, even when it differs from their own" (p. 203).

They suggest that there are three levels in the acquisition of role-taking skills. First, there is level 0, no role-taking skills; the median age of level 0 children being 3.5. Level 1, sequential decentration, where, in appropriate situations, the child can infer another's viewpoint by sequentially focusing on the aspects of the situation; the median age here being 4.5. Level 2, with a median age of 5.4, is simultaneous decentration. The child is now able to infer another's viewpoint even when it involves simultaneous consideration of two aspects of the situation.

Urberg's and Docherty's results indicate an acquisition of inferential skills at a much earlier age than those of Selman and Byrne. The reason for this, Urberg and Docherty claim, is that the role-taking tasks they gave their subjects were more age-appropriate than the task used by Selman and Byrne. This test is described by Urberg and Docherty as follows:

"Task 2 items each consisted of two pictures representing a situation with two principal characters. One item, for example, shows two children fighting over the same toy truck in the first picture. In the second picture, a woman is giving the truck to one of the two children. The subject is told 'This is a story about you. You and your friend both want to play with that truck. Then the teacher comes over and gives the truck to you. How do you feel? How does your friend feel?'" (p. 200).

Gove and Keating (1979) cast doubts on the results of Urberg and Docherty, especially on their interpretation of sequential decentration. Gove and Keating claim that what Urberg and Docherty call a sequential role-taking task is not a measure of perspective-taking at all and they offer an alternative explanation to sequential decentration:

"An alternative explanation is that for young children, feelings and other subjective processes are simply a part of their external referents. For example, the objective event of receiving a toy and the subjective emotion of feeling happy are not differentiated. In this case, the children in the Urberg and Docherty (1976) study could have responded correctly by simply naming or reading off the affective quality or component of the situations 'getting' and 'not getting' a truck" (p. 595).

It is convenient at this point to examine the different tests or methods used in role-taking research.

We have already considered one task used by Urberg and Docherty, which was developed as an extension of Borke's "Interpersonal awareness test". Borke's test was originally developed for a cross-cultural study on the early development of emotional awareness. The subjects are supposed to respond to stories describing certain interpersonal situations that might make a child feel happy, afraid, sad, or angry, by identifying the appropriate feeling. This structure makes it possible to judge whether children are able to match the right feeling with the appropriate situation. Thus, states Borke, information may be had about a subject's ability to identify other people's feelings. The stories involved contained such situations as "... eating a favorite snack, losing a toy, getting lost in the woods at night, being forced to go to bed, etc." (p. 264).

The Urberg and Docherty's task of sequential decentration, as an extension of Borke's test, required the subjects to make "two different stereotypic inferences about the two story characters, though the inferences can be made sequentially" (p. 199). Judging how a one child feels when "getting" a truck and how another child feels when "not getting" a truck requires the comparison of two situational outcomes and the subjective processes related to them. Urberg and Docherty (1976) interpret the outcome of Borke's test as showing that the subject can judge another person's feeling in a situation familiar to the subject. They then refer to a repertory of knowledge about situations common to most people and the emotional reactions usually accompanying them.

Urberg and Docherty's test is based on common knowledge too, even though it is more cognitively complicated. The criticism leveled at these tests seems to be very reasonable - that they provide more information about the subject's knowledge of interpersonal situations than about their ability to differentiate and coordinate different perspectives.

Chandler and Greenspan's procedure, described earlier, requires the subject to distinguish between his own perspective and a perspective of someone that differs from his. Borke's Interpersonal Awareness Test, and Urberg and Docherty's test of sequential decentration, fail to demand this distinction of subjects. However, inasmuch as their results provide evidence of the existence in children of knowledge that will form the basis of later perspective-taking, their tests are useful..

Selman and Byrne's test consists of two open-ended dilemmas, each presented in the form of a filmstrip. After watching them, the subjects are questioned about the story characters and their feelings and thoughts about each other. The questions are structured in accordance with the Selman and Byrne's levels of social cognition development.

Kurdek (1977) examined in detail the most widely used tests in this area: Feffer's Role Taking task, Selman's social-dilemmas, Chandler's cartoons, and a task designed by Flavell, Botkin, Fry, Whright, and Jarvis (1960), called the "nickeldime game". The nickeldime task consists of two games, the hiding game and the guessing game, in which money is hidden in one or both of two boxes. In the hiding game, "the child was shown two plastic boxes, one with one nickel and the other with two nickels taped on top. It was demonstrated that inside the boxes was the same amount of money as was indicated on the top of the box. The child was told that a boy/girl was going to come into the room later that day and would be given a chance to guess which box had the money inside. The child was further told that the boy/girl knew that he/she was going to be tricked and was then instructed to try and trick the boy/girl by removing the money from one of the boxes. The child was questioned about the reason for his/her choice. - In the guessing game, the child was shown a pair of boxes similar to that used in the hiding game. The correspondence between the money taped on the top of the box and the money inside the box was demonstrated with the hiding game boxes, after which the child was told that a boy/girl had earlier taken the money out of the guessing boxes. The child was told that he could guess which box had the money inside and was asked to explain his choice" (Kurdek, p. 1506).

Kurdek (1977) suggests that the four tests he examined should be considered as two pairs of different tasks, Selman's dilemma and Feffer's Role-Taking task being one pair, and Chandler's cartoon and Hide/Guess being the other. According to Kurdek, the first pair does not require the subject to differentiate between his own view of some social situation and that of another person, since the subject can still use his own frame of reference even when he assesses another person's view; whereas the second pair requires the subject both to separate his own view and someone else's, and to coordinate these different viewpoints simultaneously.

Of course, Kurdek's distinction is not as clear-cut as he claims. Integral to both Feffer's and Selman's theoretical interpretations, is a conception of the child recognizing that a person has his own frame of reference, implying that everybody is seen by the child as having their own perceptual field determined by their own situational position. In both Feffer's and Selman's tasks, subjects are required to take the role of two or more persons in a social situation, and consider each person's special position, and to coordinate the different personal perspectives.

In the case of Chandler's cartoons the subject is asked to describe a situation, first from his own point of view, and then from the point of view of another child who has less information about the situation than the subject himself. Here, it is still a question of the subject taking the perspective of two or more people, the only difference in this respect, between Chandler's cartoons and the tasks of Feffer and Selman, being that in Chandler's case one of the persons observed is himself an observer and not a true participant in the situation.

Putting the above mentioned tasks into a developmental sequence, we have Borke's test first, revealing the understanding of the most frequent affectual states and the situations that give rise to them; secondly, there is Urberg and Docherty's sequential decentration, implying that the child understands that a situation leading, for example, to joy in one person may evoke a quite different response in another person; and thirdly, there is the four-test battery outlined by Kurdek, which is aimed at testing the capacity for differentiating and coordinating multiple perspectives.

It is interesting to note that the onset of the ability to operate with multiple perspectives and to relate them adequately, as measured by a variety of tasks, very often lies between the ages of seven and nine. However, there is evidence to show that children as young as four years old are capable of genuine role-taking, so long as they are presented with simple situations in a familiar setting. Mossler, Marvin, and Greenberg (1976) showed two short videotaped stories to children aged from two to six years. One of the stories showed a young child walking across a back yard and through the backdoor of a house, the audio accompaniment being: "This boy/girl is going into his/her grandmother's house" (p. 85). Children watched the story individually, first with the experimenter and then again

with their mothers, but when the mother was present the audio accompaniment was omitted. Afterwards each child was asked: "Does your mommy think the boy/girl was going into a house?", and then asked to justify his/her response. The authors found that the majority of children more than four years old were able to respond non-egocentrically, but that the ability to justify their response was only apparent in children over five.

The role-taking behavior found by Mossler et al., is, of course, very different from the self-reflective role-taking reported by Selman & Byrne (1974) - where interpersonal relations are accounted for. This leads us to conclude that role-taking must be viewed in relation to its context. Thus, even though Mossler et al., managed to show evidence of perspective-taking in very young children in a simple situation, this has little relevance for perspective-taking in more complex interpersonal situations.

The theoretical view of Selman (1980) is that social perspective-taking is not only a matter of relating and coordinating different perspectives but also involves a social component - a social and psychological content, both of which are equally important. Selman asserts that social perspective-taking involves concepts of persons - "a developing understanding of the intrinsic psychological characteristics and capacities of individuals" (p. 22). The structural description of the developmental sequence of social perspective-taking is a modification of an earlier model (Selman & Byrne 1974), and each developmental level is concerned both with persons and with relationships between perspectives, the development being as follows:

Level 0: Undifferentiated and egocentric perspective-taking (about the ages of 3 to 6).

At this level, the young child's concepts of people do not involve differentiation of their physical and psychological characteristics; they are differentiated only as physical and not as psychological entities, and thus their subjective perspectives are also undifferentiated.

Level 1: Differentiated and subjective perspective-taking (about the ages of 5 to 9).

Here, people's physical and psychological characteristics are differentiated, as are their intentional and unintentional acts, but relationships between their subjective perspectives are conceived of in one-directional, unilateral terms.

Level 2: Self-reflective/second-person and reciprocal perspective-taking (about the ages of 7 to 12).

People's thoughts or feelings can now be seen as potentially multiple, and children are able to take self-reflective perspectives on their own thoughts and actions. Perspective-taking at this stage is limited to a reciprocity between oneself and a second person.

Level 3: Third-person and mutual perspective-taking (about the ages of 10 to 15)

The young adolescent becomes capable of third-person perspective-taking, to see himself as both actor and object from the viewpoint of two or more people, and of simultaneously coordinating the perspectives of self and other(s).

Level 4: In-depth and societal-symbolic perspective-taking (from about the age of 12 to adulthood).

Personality is now conceived in terms of traits, beliefs, values, and attitudes, and the individual can abstract mutual perspectives from those representative of distinct social or cultural groups.

To sum up, it is evident that preschoolers are poorer role-takers than elementary school children. The preschoolers have trouble in dealing with multiple perspectives and of understanding complex psychological states in others. Here again, the limitation of pre-operational thought is assumed to be the cause. The older children, being able to operate with multiple stimulus relations adequately, manage to differentiate and coordinate multiple perspectives and aspects of a social situation.

Concluding remarks

Selman's developmental theory of social perspective-taking incorporates most findings in the field. Children from the ages of five to seven are capable of perspective-taking, but only in unilateral terms, since in their role-taking behavior, young children are centered on subjective perspectives of one person only, and not on coordination of multiple perspectives. The young child is capable of simple affective perspective-taking, as exemplified by "a gift makes someone happy" (p. 38, cf. Borke 1971), and is capable of inferring motives and intentions (cf. Keasey, 1978). In the early elementary

school years the child becomes able to operate in a more decentred manner by taking into account and coordinating multiple perspectives and aspects of an interpersonal situation, and by inferring multiple psychological processes, and thus becomes able to apply multiple causal reasoning (cf. Sedlak & Kurtz, 1981). This developmental sequence of perspective-taking parallels that of person perception - where development progresses from physical terms to psychological terms, the increase in the use of psychological terms being greatest about the age of seven.

The chief characteristic of the development of social cognition described above appears to be a growing capacity to deal cognitively with the multiple stimulus aspects - both situational and psychological - of a social situation, as the role-taking behavior becomes reciprocal and causal attribution multiple.

S t u d i e s i n s o c i a l - b e h a v i o r u n d e r s t a n d i n g

As mentioned earlier, the purpose of the present work has been to study the manner in which children aged five to nine assign meaning to social behavior. It was assumed that, since this is only one aspect of many in the whole process of social cognition, findings in the fields of role-taking, person perception, and causal attribution could tell us much about the cognitive organization of behavior. This means that there should be a difference between preschoolers and elementary school children in their ability to make behavior intelligible, since behavior is understood by reference to psychological entities, such as those mentioned above. The purpose of the following studies was to examine this empirically.

The present work consists of four studies on children's understanding of behavior, that provide evidence of some of the changes in the manner whereby children, aged five to nine, assign meaning to behavior. These developmental changes correspond to those found in research on both role-taking and causal attribution, and they can even be compared to findings in children's person perception. In all these areas, there appear to be important developments between the ages of six and eight that mark the onset of a form of social

decentration giving rise to an increasing ability to operate with multiple social stimuli.

Method

The method in the studies consisted of showing subjects short video-films of real situations where five and six year old children were playing at a day-care center. A week was spent filming children at play, after which a few short scenes that were judged appropriate to the aim of the project were chosen as test material.

This method renders it possible to examine children's understanding of observed behavior in real situations. The emphasis was mainly on the question: "what is he/she doing?", but also on "why did he/she do that?", or "what did he/she mean by doing that". Of interest too, was "how does he/she feel?" as a means of eliciting the subjects' ability in affective perspective-taking in a changing situation.

SUMMARY OF THE FOUR STUDIES

Study I. The child as an observer of social situations

The aim was to study cognitive understanding of social situations in children aged five to eight. The main concern here was with the manner in which the children described social behavior and psychological entities within the actors, with the children's capacity to identify emotional states in the actors, and with their causal reasoning with regard to both actions and emotions. The children were shown three video-scenes about children playing or doing something together, and then asked to describe simply what happened in each film, what the children were doing, what they were feeling, and why they acted and felt as they did. Five and six-year-olds were found to use primarily global terms when describing behavior and, to a lesser degree, specific terms referring to a specific goal of an action, but almost never to use psychological entities in their spontaneous descriptions of the situations observed. When asked, however, they could infer simple motives (internal cause) to underlie actions. The five and six-year-olds were able to identify emotional states such as sad, glad, and angry, and they

understood the situational causes of these states. Seven-year-olds differed from the younger children only in their increased use of specific action terms and simple motives. Eight-year-olds differed from the two younger groups since they were able to infer interpersonal motives - they could infer a motive from an action that was not explicit in the immediate situation and which had an interpersonal content. The act itself was seen by the eight-year-olds as a means of achieving an end, an insight not attained by the younger children. Eight-year-olds were able to see actors as having two feelings simultaneously, and to apply multiple causal reasoning with regard to both actions and emotions.

It was concluded that between the ages of seven and eight there is a shift in the child's social cognition. Before the age of eight the child is centered on the immediate situation, and inference making is limited to emotions and motives that are directly related to situational factors of the immediate situation. After the age of eight, the child becomes able to view social situations in terms of interpersonal relations, and to use multiple causal reasoning. It seemed that the ability, manifested by the seven year olds, to extract more and more specific actions from the whole behavioral sequence was the forerunner of the eight-year-olds' capacity to coordinate and relate the specific actions themselves.

Study II. Developmental changes in social behavior description in children between the ages of five and nine

The purpose of this study was to examine further the findings of study I, since data obtained were limited and instructions to subjects too diffuse. In study II, more subjects were used than in the previous one, and the procedure was more systematic and precise, the children being asked to concentrate on a target person in a situation, and encouraged to describe his behavior. The subjects were children between the ages of five and nine, and the aim of the study was to obtain: (1) their description of the target person's actions, and (2) their description of the psychological import of those actions.

The subjects were shown a brief video-scene of children playing with a football, and then asked to describe the behavior of a target person in the scene. Of particular interest was such content of their descriptions as fell

into the following categories:

- (1) Action statements, including (a) global actions and (b) specific actions;
- (2) Psychological entities, including (a) emotional statements (b) intrapersonal entities (simple motives and intentions), and (c) interpersonal entities (interpersonal motives, cognition of self in relation to others, cognition of others in relation to self).

The results confirmed the trends to be expected in the age groups under consideration - i.e., that social behavior descriptions exhibit higher degrees of differentiation, and involve more psychological entities with increased age. The preschool children described social behavior in global terms, and in specific terms including goals and motives at an individual level. With regard to psychological description there was no general difference between preschoolers and first graders, but considering interpersonal cognitions only, they were applied by a significantly greater proportion of first graders than of preschoolers. First graders also differed from preschoolers in using more action statements, especially specific action terms.

The second graders did not use significantly more action statements than the first graders, but spoke significantly more in psychological terms. The increase in psychological descriptions was partly due to an increase in intrapersonal statements, but mainly to an increase in interpersonal terms. This increase in the use of psychological terms continues among the third graders - who described behavior in specific terms, emphasizing interpersonal motives and different individual perspectives. The third grader is able to view the individual as acting in relation to others and as having views of himself in relation to those with whom he is interacting.

It was concluded, that the study provides further evidence of the developmental changes usually found in studies concerning social understanding in young children. The preschooler is found to depend more on centered strategies than the elementary school child. The study also suggests that the developmental progress made in the age groups under consideration is a matter of growing ability to abstract more and more action units from the ongoing stream of behavior. It suggests that the process of social under-

standing involves two interdependent aspects: (1) The perception of actions, including a progressive differentiation of stimuli; and (2) The coordination of action units involving reference to multiple psychological processes underlying observed actions.

Study II suggests a developmental sequence as follows:

First we are to expect a global cognition of both actions and psychological states. The next involves a growing capacity for perceiving meaningful actions pertaining to simple motives and intentions at an individual level, the inference of psychological entities being restricted to the target person's immediate actions. As the ability to perceive meaningful actions increases, so the ability to coordinate actions and to infer interpersonal cognitions begins to make its appearance. The making of inferences then becomes more advanced, and the assumed causality behind actions becomes multiple. From this study, the onset of interpersonal cognitions in social behavior descriptions would seem to occur at the age of seven, which coincides with the shift from pre-operational reasoning to concrete operational reasoning in Piagetian terms.

Study III. Young children's understanding of interpersonal behavior

The aim here was to examine in children, five to eight years old, their ability to assign meaning to given social behavior in an interpersonal situation containing multiple contextual and behavioral cues. The concern was with which contextual and behavioral cues they relied on in their attempt to make a girl's verbal action intelligible - an action performed in a social situation shown on video-tape. In the video scene, the girl, who is the target person, had been fighting with a boy and due to her actions something happened to the boy's glasses and the boy began to cry. A teacher addresses his attention to the boy and tries to comfort him. Thus, the girl is faced with situational forces from two sides: (1) what happened to the boy; and (2) the presence of the teacher. At this point the girl says: "This thing with the glasses - I didn't do it on purpose". Subjects were to assign meaning to her statement and to judge her emotional state, their responses being scored according to a 3-level system, the levels of which represent different degrees of stimulus cue considerations.

Level 1 scores denote failure to understand the girl's verbal behavior in relation to the multiple contextual cues, which means that her behavior was not understood in terms of interpersonal relations. This level was used by 64% of the five-year-olds, and over 40% of the six-year-olds. Level 2 involves an interpretation of her behavior in terms of only one of the two stimulus dimensions. This level was used by only 15 out of 100 subjects, no difference being found between the age groups. In level 3 the girl's verbal behavior is made intelligible by taking into account both of the stimulus dimensions, which means that her verbal behavior was interpreted as an attempt to forestall the teacher's anger. Over 50% of the six-year-olds, 60% of the seven-year-olds, and over 80% of the eight-year-olds scored in accordance with this level.

These results suggest that assigning meaning to interpersonal behavior consists of cognitive inference-making about psychological entities on the basis of multiple situational and behavioral cues. This form of inference-making is a progressively developing skill, that includes a growing ability to differentiate and coordinate cues inherent in the situation and in the behavior of those involved. Only after the age of seven, do children gain the ability to understand interpersonal behavior by relating it to multiple situational and behavioral cues. This coincides with the development of concrete operational thinking as outlined by Piaget.

Study IV. Children's identification and coordination of inconsistent behavioral and expressive cues in pretense behavior

The purpose here was to examine children's understanding of social behavior with inconsistent behavioral and expressive cues. The subjects, preschoolers, first-graders, and third-graders, watched a videoscene presenting a real situation with the social behavioral sequence to be judged being performed by a boy who shows aggressive threatening behavior toward a girl both in his verbal statements and physical actions (behavioral cues), while presenting a positive facial expression (expressive cue). The subjects' responses were scored on three levels, in a similar way to that used in study III. In order to understand the boy's behavior as pretence behavior, the inconsistent behavioral and expressive cues need to be identified and coordinated, which was accomplished by 86% of the third-graders, and only 32% of the first-graders, who thus scored in accordance with level 3 in this study.

Level 2 scores denoted identification of the inconsistent cues but failure to coordinate them; over 30% of the preschoolers and over 20% of the first-graders scored on this level. Level 1 answers, which were scored by 66% of the preschoolers, 47% of the first graders and only 14% of the third-graders, consisted of interpretations of the boy's behavior based on negative cues only, which means that he was judged to have bad motives, to feel angry, and to have an angry face.

The results suggest that, before the age of nine, children have trouble in forming a conception of behavior containing inconsistent stimulus cues, and support the view that assigning meaning to social behavior is a form of cognitive construction, involving a capacity for identifying and coordinating multiple social stimulus cues.

D i s c u s s i o n

As was expected, the results of the four studies show that, between the ages of five and nine, there is a developmental trend in children's understanding of behavior that progresses from a concern with actions in terms of individual psychological motives, intentions, and global emotional states, toward viewing actions in relation to multiple interpersonal aspects and complex inner psychological states. The progress that takes place can be said to involve 1) a higher degree of differentiation of behavioral and situational cues, 2) increased knowledge of inner psychological processes, and 3) increased ability to coordinate and relate behavioral, and situational cues and psychological entities. As was assumed, development in the understanding of behavior corresponds to that found in role-taking, causal reasoning, and person perception. Similar developmental changes in this age group have also been reported from such allied fields as the understanding of friendship (Asher & Grossman, 1981), and social skills (Rubin & Ross, 1982).

The results reported here support the view that the child's capacity for identifying and coordinating the multiple stimulus cues of a person's behavior and its context affects the manner in which that person's actions are interpreted by the child. The preschoolers appear not to view another person's behavior in interpersonal terms, even when it occurs in an interpersonal situation; instead they seem to view his actions without considering

the social attitudes of other participants toward the actor. The actor is not seen as both subject and object. Thus, any action that has direction and a goal in the sphere of interpersonal relationships, where the actor intends to make a change in some other person's social view or attitude, is not understood by the preschoolers - at least not in terms of pure inference making. While it is reasonable to assume that, at least in familiar settings, children can learn that a given action has an interpersonal meaning, this should not be confused with inference-making.

In study II, the target person tells the other boys in the videoscene to gather around the ball, then he places the ball in the middle of the floor. Most of the preschoolers simply stated what the target person did, but without referring to interpersonal motives or goals. In study III, the target person states: "This thing with the glasses - I did not do it on purpose". Here again, the young children were only able to state what she said; they were unable to view the verbal behavior in relation to the interpersonal context. The elementary school children, however, appear to be able to view a person's interpersonal behavior as an adjustment to a social situation, the actor being seen as both subject and object. This adjustment requires that any person's behavior in a group must be viewed in terms of a set of social relationships, where the behavior of one influences and is influenced by the social behavior, views, and attitudes of others in the group.

The preschoolers in study II were not able to understand the target person's behavior as interpersonal in content, because they could not relate it to a set of rules or expectations intrinsic to the game of football, nor could they view his behavior as a signal or as a suggestion for the others involved to react in a certain way. In the scene used in study III, the elementary school children understand that the girl's aggressive behavior could have an impact on both the boy's and the teacher's social views and attitudes toward her, and thus interpret his statement as an attempt to forestall or mitigate their reactions. The preschoolers fail to do this, revealing again that, at this stage, behavior is not viewed by them as a constituent of a social process in an interpersonal event. Here, too, they do not relate behavior to a set of rules or expectations, the rules in this case being, not those of a game, but of a conventional or moral type.

The difference between the preschoolers and the elementary school children with regard to the way in which they assign meaning to behavior is in accordance with the Piagetian view that only concrete operational children operate with multiple conceptualization of a situation, whereas pre-operational children cannot adequately differentiate multiple perspectives and aspects of a situation, because they focus their attention only on one striking aspect.

This leads us to the concept of egocentrism, which according to Piaget (e.g., Piaget, 1950; Inhelder and Piaget, 1958) explains a wide variety of children's cognitions during their preschool and early school years, and which is characterized broadly by a lack of differentiation in subject-object orientation. The pre-operational child is thus on one hand embedded in his own point of view, and on the other its perspective is centered on single, perceptually striking characteristics of objects or events, and these are the two main forms of the young child's centration.

Piaget (1977) asserts that the progress made in the pre-operational period is in the direction of internal coordinations of the subject, and of external coordinations between objects, which means in the first place, that the child becomes able to make elementary inferences, and secondly, that the child begins to grasp a primitive notion of causality.

Through the process of equilibration, further progress is made until the concrete operational level is reached, not as a sudden, clearly defined step, but as the accumulation of a series of more or less continuous transformations. The feature which marks the beginning of this stage is the appearance of "reflective abstractions", which makes e.g., operatory seriation take the place of partial orderings. Another important aspect is coordination of relationships into a whole involving a closure of structures and transitivity. And then there is self-regulation, allowing transformations in the cognitive system in both directions (reversibility) and thus ensuring the conservation of each whole or sub-whole.

The form of social decentration that is supposed to take place in the development of behavior understanding, as suggested here, shows a striking similarity to the developmental sequence derived by Piaget concerning progressive differentiation and coordination. Progressive differentiation means,

the abstraction, both of more and more action units (i.e., a group of movements that can be said to form a whole) from the observed behavior of an individual, and of more and more situational elements from the situation in which the behavior takes place.

Coordination, on the other hand, involves a process of forming relationships between the different units that have been differentiated. This process has three main phases: (1) coordination of action units into behavioral sequences; (2) coordination of situational elements into situational forces; and (3) coordination of behavioral and situational aspects. Presumably these three phases occur simultaneously, and thus the actor's behavior is related to the situational forces within his perceptual field. At the pre-school age level, differentiation and coordination are centered on the individual, his immediate actions, and the situational aspects immediately related to these actions, which means that preschooler can identify emotional reactions in another person and discern their situational precursors (cf. Borke, 1971, Gove & Keating, 1979). The preschooler can thus interpret behavior by reference to simple motives and intentions at an individual level (cf. Keasey, 1978). The early elementary school child becomes able to form conceptions of behavioral sequences that derive their meaning from the multiple situational context as well as from individual behavior, the behavior being assumed to contain a consideration of interpersonal relationships, views and attitudes.

This developmental sequence of social-behavior understanding may be compared with that of person perception, as it is viewed by Barenboim (1981), according to whom behavioral comparisons lead to the creation of psychological constructs, which emerge in children at about the age of seven. Behavioral comparisons were found to increase significantly between the ages of six and eight as forerunners of the use of psychological constructs. In the case of behavioral descriptions, the use of specific action descriptions increased before the use of interpersonal cognitions emerged. This developmental sequence is also comparable with the transition from subjective perspective taking to reciprocal perspective taking in Selman's (1980) terms.

It may well be that, in simple and familiar situations, the process of progressive differentiation and coordination of behavioral and situational cues is easier than in other more complex situations. In study IV, the behavioral

sequence consisted of inconsistent action units, e.g., a smile in conjunction with a shaken fist. The coordination of such action units is, of course, as the findings of study IV showed, more difficult than that of consistent units. In study IV, the third-graders were able to interpret the behavioral sequence adequately to form a conception of pretense behavior, while the attention of those who failed, remained focussed on action units that were consistent with each other.

The results of study IV are in accordance with findings in children's causal attributions, that it is easier to infer positive correlations between different stimuli, and that it is easier to coordinate different stimuli with additive relations, than those with inverse relations (Karniol & Ross, 1976; Kun, 1977; Sedlak & Kurtz, 1981).

The developmental process of behavior understanding, and of social cognition in general, can hardly be thought to occur without social experience and learning. In his earlier work, Piaget (1950) stresses the importance of social experience in the decline of egocentrism. Through repeated interpersonal interactions, the child is forced to take cognizance of the role of the other. But in his more recent work (Piaget and Inhelder, 1969), the role of social experience is less emphasized and structural aspects predominate. He has not claimed, as is often stated, that stage-related concepts such as conservation, transitivity, and so on, are not responsive to training, which would be at variance with his interactionistic theory of development; but he has emphasized operational logic. The term egocentrism has been used as a trait to explain the limited thought of the pre-operational child in both object and social relations, which means that the decline of egocentrism would lead to progress in the child's thinking in both areas, because the cognitive structure as a whole takes another form characterized as having attained equilibrium. If Piaget's assumption about egocentrism is true, development may occur without learning as a result of structural changes or neural maturation, but this in no way diminishes the importance of the part played by social experience.

Piaget's "individualistic" approach has led to an underestimation of behavior and experience in social contexts; and unfortunately his approach has been applied uncritically in social cognitive research. The results of the present work emphasize the need of a new approach, an approach focused on

the sphere of social experience as well as on the structural aspects of social reasoning. In such an approach, it would no longer suffice to explain young children's limited social reasoning by reference only to egocentrism or a failure to decenter. The nature of the children's social knowledge and experience must be accounted for as well. The greatest limitation of the present work is that it has not been focussed on both of these aspects, though its results may serve as starting point. Since it is often through observing behavior and its consequences that children learn about people, the present approach is a suitable one for its purpose. Research on social cognition might well benefit from theories about imitation (Piaget, 1950), modeling (Bandura, 1977) and symbolic interactionism (Berger & Luckman, 1967) and even object-relation theories (Fairbairn, 1954) to name but a few important aspects; certainly, there is more to be gleaned from Mead's work than the term "role-taking" (Mead 1934).

Far from being solely a matter of taking the perspectives of other persons, social cognition is an epistemological process that begins in the first year of life and probably continues throughout adulthood. The process involves the cognitive processing of stimulus cues in the surrounding reality into meaningful signs, gestures, actions, relationship and various psychological entities, which subsequently leads to increasingly complex conceptions of people and their relationships. The present work suggests that the development of behavior understanding, parallels that of progressive differentiation and coordination of behavioral and situational cues. It would be a task worth further research to study the development of behavior understanding by considering both the social experience of children, their acquired knowledge of the social world, and the manner in which they reason about it.

Concentrating, as it does, on children's interpretations of action in real situations, the present approach has been felt to be a rewarding one, and one that represents a useful alternative to those of traditional studies in social cognition in which hypothetical stories are used as test-material.

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The Child as an Observer of Social Situations

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A b s t r a c t. - Studied cognitive understanding of social situations in 30 children, five to eight years old, who were shown two scenes on video-tape. The aim was to obtain from the subjects: (1) their description of actions, and of psychological entities within the actors, (2) their recognition of emotions, and their causal reasoning with regard both to actions and emotions in the situational context, from the individual perspective of each of the actors. The results suggest that, prior to the age of eight, a child's social perception is restricted to single causal reasoning, and to such aspects of an immediate situation as the overt actions of the participants, and their feelings of sadness, gladness and anger. Until after the age of eight, apparently, such psychological entities as interpersonal motives are not significant in the understanding of social situations; nor has multiple causal reasoning, including causes implicit in an immediate situation, yet begun to emerge.

I n t r o d u c t i o n

Understanding other people and their behavior involves cognitive interpretation. Accessible to an observer are the objective features of a person's behavior such as movements and facial expressions. Behavior acquires meaning by reference to psychological entities such as motives, intentions or sentiments - causal attribution being the fundamental principle (Heider, 1958). In this view, behavior is seen as being caused by inner factors or by situational factors, or by a combination of both. Thus the individual, by observing cause and effect relationships in his environment, is said to develop causal schemas which govern the process of social perception (e.g. Kelley, 1967, 1972, 1973).

Basic to the process of causal attribution is the perception of action, or the perceptual organization of observed behavior. A movement, or series of movements, are only perceived as meaningful action when reference can be made to a goal, a motive, or an intention. Newton et al. (1977) point out

that perceiving actions is not merely a matter of passively receiving environmental information. Instead, action perception is a form of cognitive construction. It may be assumed, then, that action perception differs from one level of cognitive development to another, though this has not been demonstrated empirically. The Heiderian view adopted here is that social perception entails role-taking. Heider (1958) states: "Social perception in general can best be described as a process between the center of one person and the center of another person, from life space to life space" (p. 33). The person is seen as a participant, or actor, in a given situation. It is the actor's behavior that is organized into meaningful actions. The causes of the actor's actions are inferred from aspects either within the actor, within his perceptual field, or both.

Current views

Three areas of research are of particular interest in our attempt to study the social perception of children. Firstly, we have the attribution tradition that examines causal schemas said to govern children's causal reasoning. Secondly, there are social cognition theorists who study the development of the ability to take perspectives. And finally, there is the person perception tradition that is concerned with the way children describe other people. We shall be examining each of these fields of research in turn.

Causal reasoning. Evidence of multiple causal reasoning in children as young as five years of age was found by Sedlak and Kurtz (1981), who reviewed empirical work on the subject. However, they came to the conclusion that, only when the causes are both facilitative and related in terms of an additive rule, can five-year-olds manage to adequately relate two causes to an effect. Though five-year-olds do have some, less developed, capacity for multiple causal attribution on the basis of one facilitative and one inhibitory cause, the causes must nevertheless be related in terms of an additive rule. There are gradual improvements in this aspect up to the age of 9 years. Only after the age of 7, do children have the ability to apply multiple causal schemas involving causes with inverse relations. The authors suggest that there is a connection between the use of causal schemas, on the one hand, and concrete operational skills, on the other.

Evidence that causal reasoning in young children is more complex than Sedlak and Kurtz suggest has, however, been reported by Shultz and Butkowsky (1977), according to whom it takes the form of a "multiple sufficient causal schema" (MSC-schema). Relying on the MSC-schema, an attributor is said to assume that an effect is the result of two potential causes - the effect occurring when either cause is present, and failing to occur when neither is present. From the MSC-schema is derived the principle of discounting, according to which, if an effect occurs in the presence of one cause, no inferences are made about the alternative cause. Shultz and Butkowsky found that five-year-olds were able to use the MSC-schema when judging the achievement behavior of others shown to them on video, whereas they failed to apply the schema when achievement behavior was presented to them in hypothetical stories.

The discounting of a plausible intrinsic cause for prosocial behavior in the presence of an extrinsic facilitative cause - i.e. a reward or command - was examined in kindergartners by Karniol and Ross (1976). The kindergartners in their study did not use the discounting principle. Instead, the presence of external facilitation lead the children to assume an increased contribution of the internal cause. This was labelled "the additive rule" by the authors. The older children viewed reward or command as sufficient causes and discounted the intrinsic cause. The authors hypothesize that an explanation for the failure to discount may be that young children are unaware of such psychological entities as manipulative intent on the part of the person offering a reward or command.

Cohen, Gelfand, and Hartman (1981) found weak support for Karniol and Ross' hypothesis, and suggest that the inference of manipulative intent, while necessary, is not sufficient in itself for discounting. The older children in their study, who were discounters, were supposed to engage in a two-part reasoning process. They inferred both manipulative intent, and doubts about the children's willingness to help, as belonging to the adult offering reward or command. The younger children failed to engage in this two-part reasoning process.

An alternative interpretation can be offered that is more in accordance with the view presented in this study. The subjects of the study of Cohen

et al. were to attribute causes both to the child actor's helping behavior and to the adult actor's manipulative behavior. In the view adopted in this work, both of these attribution tasks imply a consideration of each actor's situational position and perspective. Therefore, the conclusion should simply be, that subjects, who used multiple causal reasoning with regard to the child actor's behavior, showed tendencies to use multiple causal strategies when considering the behavior of the adult actor as well.

Sedlak and Kurtz (1981) are critical of the idea of explaining children's failure to discount as the result of perspective-taking deficiency. They point to the findings of Kun (1977) concerning inferences about two internal facilitative causes - effort and ability. In Kun's study, children under seven showed evidence of an "augmentation error" - i.e. they assumed a direct relation to exist between effort and ability. The children older than seven, on the other hand, reasoned that a small amount of effort is related to high degree of ability. Sedlak and Kurtz suggest two alternative explanations of the augmentation error and the use of additive principles. The first is "cause-effect syncretism": The younger child is assumed to view the two factors involved as an undifferentiated complex, while the older child sees them as independent. The second explanation is "correlation decentering": The young child initially sees the two factors as positively correlated and is unable to change this assumption even though the external evidence indicates another interpretation.

A study of relevance to the present work is Berndt's study from 1977. Berndt found that young children used situational attribution when judging reciprocal behavior and personal attribution for non-reciprocal behavior. According to Berndt, this means that young children can interpret "both an actor's personal characteristics and situational forces as possible causes of behavior" (p. 1328).

Perspective-taking. Researchers in the field of social cognition or perspective-taking have based their research on the Piagetian model with emphasis on structure and stages of development. The most frequently held view is that non-egocentric perspective-taking should imply the ability to anticipate what someone else might think, feel, or see when those thoughts, feelings, or views are different from one's own (e.g. Chandler & Greenspan,

1972). In the strict Piagetian sense, non-egocentric perspective-taking is not accomplished before six to eight years of age. Some authors have found evidence supporting this view (see e.g. Chandler & Greenspan, 1972; Flavell, Botkin, Fry, Wright, & Jarvis, 1968). Others have found evidence of perspective-taking at three to four years of age (e.g. Borke, 1971; Fishbein, Lewis, & Keiffer, 1972; Mossler, Marvin, & Greenberg, 1976; Flavell, Flavell, Green, & Wilcox, 1981). Greenspan, Barenboim, and Chandler (1976) found support for both of these positions. Their results indicate that six-year-olds are capable of affective perspective-taking, but only in a centered and univariate way. In more complex stimulus situations, requiring a coordination of inconsistent stimulus dimensions, the young children in their study based their perspective judgment on only one of the incongruent cues. Third-graders, however, were capable of such coordination.

Two aspects of the methodology used in this area are of importance. One is the complexity of the stimulus situation presented to the child, and the other is the complexity of the answers that are required. When neither aspect is complex the young child is more likely to show some evidence of perspective-taking. As complexity increases, the young child fails more and more often. This is the case in all three dimensions of perspective-taking, viz. visual perspective-taking, affective perspective-taking, and cognitive perspective-taking.

The empirical work mentioned above indicates that perspective-taking, as the ability to assume perspectives other than one's own, is not just a matter of some skill developing in middle childhood. Young children are capable of perspective-taking behavior, but it is dependent upon the complexity of the stimulus situation in which it occurs. Eliot and Dayton (1976), for instance, claim that egocentric error is more a function of task complexity and familiarity with perceptual tasks than of inability to take another person's perspective.

Person perception. Person perception deals with the description of persons and personalities. The developmental trend of person perception seems to go from descriptions of pshysical characteristics toward descriptions of psychological characteristics (Livesley & Bromley, 1973). Before the age of seven, children describe others in terms of appearance or overt behavior.

Between the ages eight and twelve, there is a rapid growth in the use of psychological terms. After that, the psychological growth slows down but becomes more organized. Barnboim (1981) found that the developmental sequence of person perception goes from behavioral comparisons to psychological comparisons. The use of psychological constructs was found to be almost non-existent before the age of seven. Behavioral comparisons, on the other hand, were frequent. The seven- to eleven-year-olds used psychological constructs often, but did not apply psychological comparisons.

The aim of the present study

The purpose of the present work is to study the child as an observer of social situations - to explore the main features of social perception, and its development in children between the ages of five and eight.

Children as young as five years old have been shown to be capable of identifying the most common emotional reactions such as anger, sadness, and gladness, and of recognizing the external causes of these reactions (Borke, 1971). They are able to recognize intrinsic motivation and external forces as causes of behavior (Berndt, 1977). They are even capable of simple forms of multiple causal reasoning (Sedlak & Kurtz, 1981). The use of psychological constructs is, however, very rare in children before the age of seven. With younger children, behavioral terms predominate with regard to person perception (Barenboim, 1981).

According to Piaget (e.g. Piaget, 1951, 1974), the young child is both precausal and egocentric. Between the ages of seven and eight, the child becomes capable of handling causal relations and of taking perspectives other than his own. Piaget and Inhelder (1969) also claim that the development of cognitive and of social relations follow the same general pattern - that they are, in fact, parallel and inseparable. According to this assumption, the young child's social perception should be considerably less developed than that of middle childhood.

The approach adopted here is that social perception is an epistemological process, and not merely a question of the development of cognitive skills in causal reasoning and perspective-taking. A study of social perception should reveal what strategies are applied in assigning meaning to social

situations, and how these strategies develop with age. It is hypothesized that, when describing social behavior, five to seven-year-old children are preoccupied with actions and emotional expressions in the immediate situation without reference to inner psychological processes. At the ages of seven to eight, the child should become capable of considering intentions, motives, psychological reactions, and individual perspectives as an important aspect of social behavior. The assumed causality intrinsic in the social perception strategies should go from single cause-effect relations toward more complex form of multiple causes both internal and external.

Subjects watched video-films of real situations where five and six-year-olds are playing at a day-care center. The study is focused on the subjects' descriptions of actions, emotions, and psychological entities, on the one hand, and their causal attribution of both emotions and actions, on the other.

Method

Subjects

Thirty middle-class children, 5-8 years old served as subjects. For the purposes of the investigation, they were divided by age into three groups of ten, with five boys and five girls in each. Group I consisted of five and six-year-olds ($\bar{x}$ = 71.3 months), group II of seven-year-olds ($\bar{x}$ = 91.3 months), and group III of eight-year-olds ($\bar{x}$ = 105.5 months).

Equipment

The children watched the social situations on a 13-inch television monitor. The video-scenes lasted from one to two minutes. They were presented in black and white with full sound. The children's descriptions and answers to causal questions were audiotaped.

The video-scenes

The author spent a week filming children at play in a kindergarten. Three short scenes were subsequently chosen for use in the present study. The children in the scenes were from five to seven years old. The first situation shown was only intended as an example to acquaint the subjects with the procedure of the test situation. The second and the third were used as test material.

In the first situation children are playing with chairs - a make-believe train. As they play, the teacher comes into the room and tells them to stop playing. The teacher then orders the children to start tidying up what they had been playing with. The children react differently to the teacher's order. Two of them, a girl and a boy, who had not actually been involved in the game, react positively. Two girls, who had been very much involved in playing with the train, react negatively and protest. All children, however, obey the teacher's order.

In the second situation two children, a boy and a girl, are fighting. The teacher cannot be seen in this scene but can be heard. He tells the children to stop fighting. They stop and stand facing each other without moving. The girl says: "I'm stronger than you are". The boy, then, attacks the girl and the fight starts again. The boy is wearing glasses and frequently uses one hand to hold the glasses while fighting with the other. The girl fights with one hand and reaches for the boy's glasses with the other. Finally the girl hits the boy hard on the hand he uses to hold his glasses. The boy stops fighting. He leaves crying and saying: "Look what you have done to my glasses". The girl stands motionless with her face turned toward the boy. The teacher's voice is heard saying: "Come and show me your glasses. Let me look at them. Maybe I can fix them". The boy replies: "I have already fixed them myself". The girl, turning her head toward the teacher, says: "This thing with the glasses, I didn't do it on purpose". The boy leaves the room.

The third scene begins by showing two boys running and kicking each other. They are making a din and laughing happily. After a while the bigger of the two grabs hold of one of the smaller boy's feet, and he falls on the floor. He stands up and they do the same thing over again. Then, a third boy appears on the scene and kicks the small boy hard on the leg, but the small boy takes no notice of him. The third boy kicks him again, and the small boy falls on the floor with a scream. He tells the third boy to stop kicking him and calls him a fool. "I could have got a nose-bleed or something". Then he lies down on the floor and the boy he had been playing with at the start begins tickling him. The third one goes away, but returns immediately and begins hitting the small boy on his back. The small boy's playmate begins to pummel his back as well. The small boy stops laughing and starts yelling, telling them to stop, while the other two laugh.

Scoring procedure

The subjects' descriptions were content-analyzed in terms of statements about actions, emotions, and psychological entities (cf. Livesley & Bromley, 1973). Answers about causal relations were categorized as single causal reasoning, multiple causal reasoning, syncretic reasoning, or non-causal reasoning (cf. Karniol & Ross, 1976; Berndt, 1977).

Action statements have been categorized into four different kinds: (1) Global action - where only ongoing behavior, the action of a person or persons, is described, without reference to any specific goal or direction (e.g. "they are playing", "they are fighting"). (2) Specific action - where actions are described as having some specific goal or direction (e.g. "she hit the boy", "he picked up his glasses and left"). (3) Verbal action - where the actions are verbal statements by the actors. (4) Incidents - where events are described, but without reference to any personal cause or intention (e.g. "he fell on the floor", "his glasses broke").

Emotional reaction statements have been divided into six subcategories. The first four subcategories include statements about "glad", "sad", "angry", and "afraid". The fifth subcategory consists of statements wherein two feelings are combined e.g. "she was angry and sad at the same time". The final subcategory consists of statements about feelings not included in the five first subcategories (e.g. "disappointed").

Psychological statements have been subcategorized into four different types: (1) Simple motives - where motives refer to longings of some sort that are directly related to the behavior exhibited (e.g. "he hit the boy, he wanted to fight"). (2) Interpersonal motives - where motives have some specific goal in the interpersonal sphere (e.g. "he hit the boy, he wanted show the other boy that he was strong"). (3) View of self - statements about the actor viewing himself (e.g. "he thinks he is strong"). (4) View of other - statements about the actor viewing another person (e.g. "he thinks the girl is feeling, thinking, or imagining something").

Answers about causal relations were subcategorized into five types: (1) Syncretism - where answers relate a feeling to its external referents without regard to cause-effect relationships (e.g. "they are angry because they are fighting", and "they are glad because they have stopped fighting"). (2) Single external cause - an answer falling into this subcategory with regard to emotions could be "the boy is sad because the girl hit him". In the case of actions, the answer could be "she hit the boy because he hit her first". (3) Single internal cause - appropriate examples here would be: "the boy is sad because he is not strong" and "he hit him because he wanted to fight". Internal cause refers to a motive, a feeling, or personal characteristics. (4) Multiple cause - where two or more factors are recognized as causing an action or emotion (e.g. "he is pleased because he is strong and because he won the fight", or "the girl hit the boy, because she didn't want to fight; so she did it to make him stop fighting"). (5) Noncausal answers - including answers like "I don't know".

Procedure

Each subject was tested individually. The subjects were told that they were going to be shown three brief TV-films about children playing or doing something together. They were asked to describe what happened in each film, what the children were doing, and how they were feeling. Finally they were asked to guess why the children acted as they did. The subjects watched each film twice. After the first presentation they described what happened and what the children were doing. As the subjects watched for the second time, they were asked about the feelings of the actors and about the causes of both emotional reactions and actions. While this was being done, the film was stopped and only a still-picture showed on the screen. The description of the first presentation was used as a frame of reference. In the case of the second film, for example, the experimenter might say: "You said that they were fighting. Now, can you tell me how they feel?". The subject answered and was then told: "Now we start the film again. When you think that the children have stopped fighting, or that their feelings have changed, push this button and the film will stop again". When the film stopped, the subject was asked about the feelings of the children, and about the reasons for the feelings (e.g. "why do you think he is sad?"). The cause of an action reported in the first description was also sought at this point (e.g. "why do you think the girl hit the boy?"). Besides verbal reports of feelings, the subjects were given the opportunity of using dolls with blank, featureless faces and doll-faces featuring glad, sad, angry, and afraid expressions. Facial expressions, appropriate to what was happening in the scene could then be put on the doll-bodies (cf. Borke, 1971).

Results

Inter-rater reliability

Inter-rater reliabilities were assessed by selecting 4 protocols at random. The raters did not know the age or sex of the children whose protocols were being scored. The statistical test used to test the inter-rater agreement was Kappa (Cohen, 1960). The kappa coefficient is a measure of agreement between raters after chance agreement has been excluded. The method is similar to ϕ , the product-moment correlation for the dichotomous case.

Inter-rater reliability was moderately high for all the social description categories, and for the causal reasoning category. The kappa coefficient for actions was 0.88, for emotions 0.95, and for psychological entities 0.87. For the causal relations the Kappa value was 0.81.

Three-factor ANOVA

A three-factor ANOVA (with repeated measures on C) (Winer, 1962, p. 341) was performed for each of the social description categories. The structure of the ANOVA was 3(age) x 2(sex) x 4(subgroups of each category) - or x 6 in the case of emotions. All significant F values are presented in Table 1 and are graphically represented in Figures 1 to 5 on page 12.

Table 1. Summary of ANOVAs on the use of statements about actions, emotions and psychological entities in describing social situations.

	Source of variation	df	F	p
	Action statements:			
Social perception category	Age	2,24	25.54	.01
	Sex	1,24	5.78	.05
	Age x sex	2,24	5.82	.01
	Age x subcategory ...	6,72	4.68	.01
	Age x sex x subcat...	6,72	3.47	.01
	Emotion statements:			
	Age x subcategory ...	10,120	2.55	.01
	Psychological entities:			
	Age	2,24	6.99	.01

As can be seen there is a significant increase with age in the use of action statements and in the use of psychological entities (Fig. 1). Sex differences were found with regard to action statements used. The sex difference was most prominent in group II (Fig. 2). The use of all the subcategories of action statements but global actions was found to increase with age (Fig. 3). No significant difference was found in the use of the four subcategories with regard to sex. The interaction of sex, age, and subcategory was however significant (Fig. 4 a-d). It is this interaction that represents the only genuinely significant differences found in the use of action statements. The specific action subcategory accounts for the greatest increase with age (Fig. 4 b). Differences in other subcategories were found to be small. In terms of proportions, global action statements decreased with age, as the role of the other subcategories was found to increase (Table 2).

Table 2. Proportional distribution of the subcategories of action statements in each age-group.

	Global actions	Specific actions	Verbal actions	Incidents
Group I	56.87	37.25	1.90	3.90
Group II	39.34	37.70	18.03	4.90
Group III	30.20	46.88	16.67	6.25

No difference was found between the groups with regard to the frequency of statements used about emotional reactions. The groups differed, however, in their use of the subcategories (Fig. 5). The youngest group used only statements falling into the subcategories sad, glad, and angry. The two older groups showed a growing tendency to use a broader range of emotional statements.

The use of psychological entities

As stated above, an increase in the use of psychological statements with age was revealed (Table 1). The increase, however, was equally spread over the four subcategories. Comparing the age-groups with Fisher's exact test for 2 x 2 tables showed that there were differences in the use of the four subcategories from group to group. The results of these comparisons are

★ Action statements
* Psychol. "

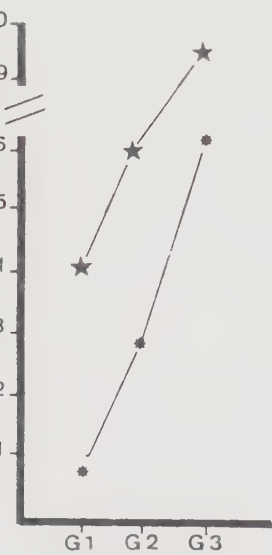


Fig. 1. Mean scores of action and psychological statements by age.

★ Female
* Male

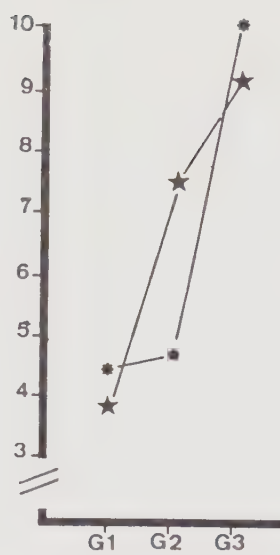


Fig. 2. Males' and females' mean scores of action statements by age.

★ Global actions
○ Specific "
* Incidents
• Verbal "

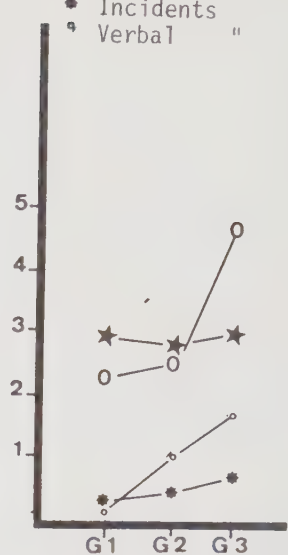


Fig. 3. The groups' mean scores on the subcategories of action statements.

★ Female
* Male

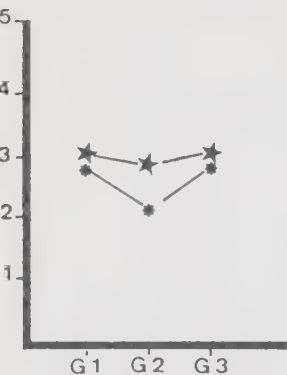


Fig. 4. a, b, c, & d. Males' and females' mean scores on the four subcategories of action statements by age. a) global, b) specific, c) verbal, and d) incidents.

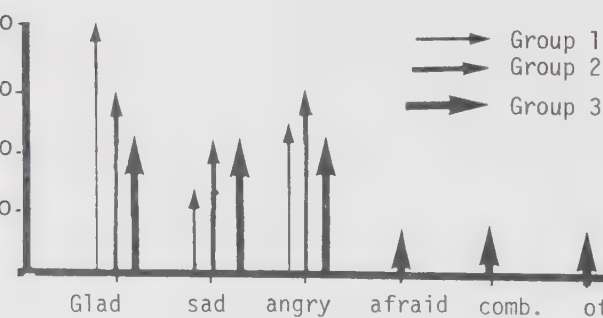


Fig. 5. The number of emotion statements in each group.

presented in Table 3. As can be seen the majority of the eight-year-olds used all four of the subcategories. By contrast, only a few of the five, six, and seven-year-olds used psychological statements at all.

Table 3. The number of subjects in each group using vs. not using the various subcategories of psychological entities.

The subcategories of psychological entities	Groups			Differences between groups
	1	2	3	
Ss using simple motives	1	5	8	I & II non-significant
Ss not using simple motives	9	5	2	II & III non-significant I & III significant ($p = .003$)
Ss using interpersonal motives	0	1	7	I & II non-significant
Ss not using interpersonal motives	10	9	3	II & III significant ($p = .01$) I & III significant ($p = .002$)
Ss using view of self	1	1	9	I & II non-significant
Ss not using view of self	9	9	1	II & III significant ($p = .001$) I & III significant ($p = .001$)
Ss using view of others	0	3	6	I & II non-significant
Ss not using view of others	10	7	4	II & III non-significant I & III significant ($p = .005$)

Causal attribution

The causal attribution strategies used by the subjects are represented in Tables 4 and 5.

Table 4. Causal attribution strategies used by subjects in each group with regard to emotions.

Strategies	Groups		
	1	2	3
Syncretism and/or "I don't know"	2	1	0
Syncretism, "I don't know", and single cause	5	6	0
Single cause	3	1	6
Single and multiple cause	0	2	4

Table 5. Causal attribution strategies used by subjects in each group with regard to actions.

Strategies	Groups		
	1	2	3
"I don't know"	1	1	1
"I don't know", and single cause	3	4	0
Single internal cause	6	1	0
Single internal cause and multiple cause	0	3	4
Single internal, external, and multiple cause	0	1	5

It is evident that the complexity of the strategies increases with age. This trend is more obvious with regard to causal attributions about actions than about emotions. The majority of the subjects attributed a single cause to emotional reactions. Groups I and II also tended to use syncretic reasoning or "I don't know" answers. The oldest group, on the other hand, used single causal reasoning - either alone or along with multiple causal reasoning. A Fisher exact test shows a significant difference in this respect ($p = 0.002$). Only one subject used an internal causal attribution. Single internal cause was the most frequently applied strategy in respect to actions. The youngest group used internal cause - either as the only strategy, or along with "I don't know" answers. The oldest group, on the other hand, showed ability to apply both single and multiple causal strategies. A Fisher exact test reveals a significant difference in this respect between groups I and III ($p = 0.001$). Group II seems to fall in between the two other groups. No case of syncretic causal reasoning was found.

Causal attribution in relation to the use of statements of psychological entities and of emotions

The Fisher test was also applied to the relation of multiple causal reasoning to the use of psychological entities, on the one hand, and to the use of emotional statements, on the other. The results are presented in Table 6.

Table 6. The relation between the subjects' success in using multiple causal reasoning and the success in conceiving a) psychological entities, b) interpersonal motives, c) emotional reactions, and d) fear reactions in their description of social situations.

Multiple causal reasoning	Psychological entities		Interpersonal motives		Emotional reactions		Fear reactions	
	suc- cess	Fail- ure	Suc- cess	Fail- ure	Ad- vanced	Re- stricted	Suc- cess	Fail- ure
Failure	4	13	0	17	1	16	0	17
Success	13	0	9	4	6	7	7	6
P	.001		.001		.015		.003	

Those who did not apply multiple causal reasoning rarely used psychological entities, and restricted their use of emotional statements to sad, glad, and angry. Those who applied multiple causal reasoning tended to use psychological entities as well. It was also found that those who were advanced in their use of emotional statements (i.e. not restricted to sad, glad, and angry) were also advanced in their causal reasoning. There was, however, a group of subjects capable of multiple causal reasoning that were restricted in their use of emotional statements. A relation was also found to exist between the use of "afraid" statements and multiple causal reasoning ($\phi = 0.68$).

Discussion

The overall hypothesis was confirmed. Action statements, especially global ones, were frequently used by the five and six-year-olds, while psychological entities almost never appeared in their descriptions. An increase in the use of specific action statements with increasing age was noticed along with more frequent use of psychological entities. The role of psychological entities became increasingly important in understanding each actor's behavior in the situational context. This is, in general, in accordance with earlier research on person description (Livesley & Bromley, 1973; Barenboim, 1981).

All the subjects were able to make statements about such emotional reactions as sad, glad, and angry, and almost all could point to the external forces

underlying these reactions. This agrees with, for example, Borke's (1971) view of affective perspective-taking in young children. The eight-year-olds, in contrast to the younger subjects, were able to see actors as having two feelings simultaneously, and to perceive fear reactions in the actors. All the subjects who perceived fear reactions in the first film, related these reactions to situational forces not found in the immediate situation. The situational forces, underlying fear reactions in this particular situation, had to be inferred as a possible consequence of previous actions (e.g. "she was afraid that the teacher would punish her for what she did"). This does not mean that the younger children are unable to perceive fear reactions in others, but only suggests that affective perspective-taking involves reference to situational forces. Not being able to see the situational forces, or viewing them as non-relevant, diminishes the probability of perceiving the emotional reactions that otherwise would be connected with them. Threat of punishment was not part of the immediate situation in this case. Only the 8-year-olds were able to infer such threat as a possibility and, therefore, inferred fear reactions in the actor concerned.

A similar process seems to govern the use of statements about interpersonal motives and the use of causal attribution. Eight-year-olds all used interpersonal motives in their descriptions. The actor was seen to have an interpersonal goal in mind. The goal was something that had to be inferred from an action and that was not explicit in the immediate situation. The actor was seen to behave in a certain way in order to influence the other actors to act in accordance with the first actor's wishes. The act itself was seen as a means to a goal. This distinction was not made by the younger children.

The developmental trend, with regard to the content of the social descriptions, seems to go from global actions and emotional reactions to description of specific actions occurring in a chain-like manner, without reference to psychological entities, toward description of actions, emotions, and psychological entities and their interrelations.

The younger children only seem to be able to infer feelings in others when they are reactions to something that has happened in the situation. They

do not seem to be able to do this when the inferences concern reactions to something that might happen, unless it is explicit in the immediate situation. Seven-year-olds can infer simple motives in others (i.e. conceive of an internal cause) from their actions. They seem to perceive actions as the external referents to internal motivation. If, for instance, a young child sees one child hitting another without provocation, the aggressor is judged to have internal motivation to fight. The older child, however, may reason that the fight itself was not intended, and assume the cause to be what stood to be gained from the fight. This has relevance with regard to the discounting principle (cf. Karniol & Ross, 1976) mentioned earlier. The young child's failure to discount could depend on its failure to distinguish between action and intention.

In terms of causal reasoning about actions, there is a developmental trend from using internal cause only (simple motive) toward a more flexible use of causal schemas where external and multiple causes are also applied.

The sex differences found in the use of action statements did not appear in other categories of social perception. It is difficult, therefore, to judge the relevance of this result to the issue of sex differences in the whole process of social relations.

It may be possible that the present results have been affected by the methodological procedure used in the study. Both the instructions and the subject's responses make demands on verbal capabilities. Therefore, the young child's poorer performance could perhaps be partly explained by poorer verbal fluency. However, lack of verbal skills can hardly explain it all since, for instance, subjects were also given the opportunity to use non-verbal responses to questions regarding the recognition of emotions. Furthermore, the use of psychological entities and causal statements were not solely measured with regard to frequency; the children were also grouped according to whether they employed such categories or not, regardless of how often they appeared in the descriptions. Here, there was a considerable difference between the two younger groups and the oldest; interpersonal motives, for instance, did not occur at all in the youngest group.

C o n c l u s i o n

It is concluded that the young child's social perception is based on his observation of an actor's actions (per se) in any given situational context. An action is seen as a whole, consisting of both the overt behavior of the actor and the observable consequences of that behavior. The eight-year-olds are able to distinguish between the overt behavior and the observable consequences of it. They are also able to infer behavioral goals, i.e. causes not explicit in the immediate situation. The younger child, on the other hand, is centered on the immediate situation.

This finding is in accordance with Piaget's theory of the limited thought in the preoperational child, but it also suggests new interpretations. It is incorrect to claim that the preoperational child is unable to see other people's perspectives or to see causal relations. It would be more appropriate to say that the preoperational child's perspective-taking is limited to inner aspects that are directly related to external factors of the immediate situation, and that his causal reasoning is limited to single factors in this situation.

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Developmental Changes in Social Behavior Description
in Children between the Ages of Five to Nine

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A b s t r a c t. - Descriptions of social behavior were studied in 118 children, from kindergarten through third grade, who were shown the same social situation on video-tape. The aim was to obtain from the subjects: (1) their description of a target person's actions, and (2) their description of the psychological import of those actions. The results suggest developmental progress from (a) description of global actions and emotional states, to (b) description of specific actions accompanied by specific individual psychological motives and intentions, to (c) description of specific actions involving interpersonal cognitions with multiple psychological meaning. The onset of interpersonal cognitions appears to occur at the age of seven.

I n t r o d u c t i o n

The object of this work has been to study the process of social cognitive development in children between the ages of 5 and 9 years, the chief concern being with how children describe social behavior and to what extent they refer to psychological entities.

According to Piaget (1972), perception and action are the starting points from which cognitive processes develop. As the child interacts with his environment, he develops increasingly sophisticated mental abilities. This development involves a decentration from extreme egocentrism to advanced forms of abstract thinking. The young child's egocentricity is manifested in his inability to differentiate accurately between mental products and perceptual givens. The child capable of concrete operational thinking can retain both the mental symbol and its referent in his mind at the same time and thus distinguish between them. He is capable of reversible transformation, the fusion of anticipation and retrospection, that enables him to think in multiple causal terms and so to progress from egocentrism.

Piaget (1950) claims that the development of impersonal and of interpersonal cognitions are structurally parallel. Feffer (1959), and Feffer and Gourevitch (1960), support the view that a relationship exists between decentration in the social sphere of experience and decentration in the physical sphere. Feffer terms the process of social decentration "role taking", a term initially coined by Mead (1934) to stand for the ability to understand oneself and others as subjects, to react to others as to oneself, and to react to one's own behavior from the other's point of view.

Understanding the reactions of others and their points of view requires cognitive processing, the basis of which is the objective features of their movements, facial expressions, and bodily position. Heider (1958) proposes that behavior acquires meaning by reference to psychological entities such as motives, intentions, or sentiments - causal attribution being the fundamental principle. A person's behavior is organized by an observer into meaningful actions by reference to psychological properties of performed actions. The acting person is seen as a participant in a given situation, either reacting to, or acting upon something in the situation, which is assumed to be in his perceptual field. This process is similar to the process of role taking as defined by Mead.

Research concerning social cognitive development has provided evidence of important developmental changes between the ages of 5 and 9 years, the period of transition from preoperational to concrete operational thinking. Elementary school children have been shown to have greater capacity than preschoolers for role taking. The older children are not only capable of role taking in more complicated stimulus situations, but also better able to deal with such psychological entities as the cognitions, motives, and intentions of other people (Chandler & Greenspan, 1972; Flavell, 1974; Shantz, 1975; Selman, 1980).

With regard to person perception, it has been shown that, before the age of 7, children describe others in terms of physical characteristics, whereas older children rely more on psychological terms (Livesley & Bromley, 1973); and when comparing people, young children refer to behavioral traits, while older children refer to psychological constructs (Barenboim, 1981).

Marsh (1982) provides evidence of an increase in interpersonal problem-solving abilities in elementary school children; they analyzed interpersonal problems more psychologically and conceptually, and exhibited a greater degree of differentiation in their analyses than did the preschoolers.

In the area of social causal reasoning, there is evidence of the use of multiple causal schemas by young children, but in the elementary school years this is markedly improved, and more complicated causal relations are accounted for (Sedlak & Kurtz, 1981).

The empirical work mentioned above indicates that the preschool child is not fully capable of understanding and of using psychological terms. Furthermore, the preschooler is deficient in causal reasoning when compared with older children, and exhibits a more limited degree of differentiation in analyzing interpersonal problems. Hence, a developmental change in describing social behavior can be expected to occur between the preschool and elementary schoolages.

Here the emphasis has been placed on the description of ongoing action. With regard to social cognition, the main focus has been on inference making about the thoughts, feelings, and perspectives of a person in a given social situation, but not on his behavior per se. This is also the case in causal attribution, where the emphasis has been on the identification of possible causes of given behavior, and not on the organization of ongoing behavior; whereas the main concern here is how children between the ages of 5 and 9 verbally organize ongoing action, and to what extent they refer to psychological entities.

In a previous study (Viborg, 1982), evidence was found of a developmental change in children's description of social behavior between the ages of 5 and 8. The sequential trend of the developmental changes seem to progress from more or less exclusive focus on global behavioral and emotional patterns, toward increased differentiation of these aspects, where psychological processes are increasingly accounted for. The preschoolers studied were found to describe social behavior in global terms such as "they are playing". They also used specific action descriptions, but never referred spontaneously to psychological motives in order to give meaning to behavior observed. When asked, however, to state the reason for some specific action, the pre-

schoolers referred to simple motives (e.g., "the boy hit the girl because he wanted to fight"). The simple motives, the study suggests, are in the form of single internal causes and seem to be an integral part of overt action. The eight-year-olds had a description-profile quite different from that of the preschoolers. They predominately described social behavior in terms of specific actions, and referred spontaneously to psychological motives, cognitions, and individual perspectives when assigning meaning to behavior observed. They were governed by multiple causal attribution strategies. The seven-year-olds seem to fall between the preschoolers and the eight-year-olds. They made more use than the younger children of specific action statements, frequently referring spontaneously to simple motives. They did not, however, refer to multiple psychological processes as did the older children. With regard to the description of emotional reactions, the same principle seems to apply as in the description of actions. The preschool children recognize the most common emotional reactions such as sad, glad, and angry, and are able to point out single situational causes for such reactions. The older children have a greater repertoire of emotional terms and are able to refer to multiple situational and personal causes.

The conclusion drawn from the above results was that the preschooler is preoccupied with the most global behavioral and emotional aspects of the immediate situation. In the early elementary school years, the child has reached a level of social behavior description where he can recognize more specific actions than before; and where he can relate different actions by reference to multiple psychological processes within the actor. It seems that the ability to extract more and more specific actions from the whole behavioral sequence emerges before the capacity to coordinate the specific actions themselves.

This generalization, based as it was on rather limited data, requires further examination, which is the aim of the present study. Only 30 children were involved in the previous study, and instructions were too diffuse, since the children were merely asked to describe what happened in a given social situation. More subjects are used in the present study, and the procedure is more systematic, the children now being asked to concentrate on a target person in a social situation, and encouraged to describe his behavior.

Method

Subjects. The subjects were 118 middle-class children, of whom 33 were kindergartners (19 males and 14 females), 31 first graders (18 males and 13 females), 27 second graders (16 males and 11 females), and 27 third graders (17 males and 10 females). The mean ages in the grades were 6.1, 7.9, 8.7 and 9.7 years respectively, and in no instance did the age ranges of children from adjacent grades overlap.

The video-scene. The subjects watched a videofilm of a real situation with five and six-year-olds at a day-care center. Five boys are shown playing together with a football, and the scene begins with them indicating that they want and intend to have a game of football; the scene lasts about four minutes and ends with the boys finally organized enough to be able to start the game. The whole situation was presented in three sessions, one following the other, with short intervals during which the subjects gave their descriptions.

The first session shows the boys moving rather aimlessly around in the school playhall, some of them chasing a football, some just talking. They are saying such things as: "we haven't started yet", "you don't do that in football" and so on. Then, one of the boys, the target person, picks up the ball and says: "I'm going to be the referee".

The second session shows the target person repeatedly saying: "I'm the referee", while walking around and keeping the ball to himself. First one boy tries unsuccessfully to take the ball away from the "referee", then another boy kicks the ball out of the "referee's" hands and laughs. The target person grabs the ball back but the other boy again kicks it out of his hands, laughing even more than before. The target person then grabs the ball and holds on to it firmly. The rest of the boys keep on moving around aimlessly saying such things as: "I'm the goal keeper", or "I'm a football player".

The third session starts with the target person turning toward the boy who kicked the ball twice and asking him what he wants to be. The boy answers, and the "referee" puts the same question to each of the other boys in turn. Then he begins to give orders about where they are to stand and what they

shall do, while he remains in the middle of the group, holding the ball with one hand and pointing at them. They do as he says. Finally, he puts the ball down on the floor and orders them to gather round it. He says: "now!", and they begin to play.

Equipment. The children watched the video-scene on a 13-inch television monitor. The scene was presented in black and white with full sound. The children's descriptions were audiotaped.

Procedure. The subjects were tested individually. They were told that they were to watch one short film on television showing children at play. They were instructed to tell the experimenter what the children are doing and to pay special attention to a target person in the film, and encouraged to take his role. In the first interval, after the first session, the subjects were asked: "What are they doing?". When the subjects had answered, the experimenter gave the following instruction: "Do you see the boy with the ball in his hands? I want you to watch this boy carefully, and to notice what he is doing as the film continues". In the two subsequent intervals the following questions were asked: "Now, what can you tell me about the boy?", "What has he been doing?", "What is he feeling?".

Scoring procedure. The subjects' descriptions were categorized in terms of action and psychological statements. Statements about actions included the following categories: (1) Global actions - where actions have no specific object or direction, but include only a description of ongoing action; and (2) Specific actions - where actions have specific object, goal, and direction. These actions can be both verbal and physical. Statements referring to inner psychological activities and processes included the following categories: (1) Emotional statements; (2) Intrapersonal entities, involving simple motives and intentions; and (3) Interpersonal entities - where statements about cognitions or intentions have interpersonal content. They include (a) the target person's cognition of himself in relation to the other(s); (b) the target person's cognition of the other(s) in relation to himself; and (c) interpersonal motives - where the motives have some specific purpose in the interpersonal sphere. Examples from each category are presented in Table 1.

Table 1. The Most Frequent Statements in Each Social Description Category.

Action Statements	<u>Global</u>: They are playing football; they are fighting; he is holding the ball; he kicked the ball; he dropped the ball. <u>Specific</u>: He is the referee; he divided the players into teams; he told them to gather around the ball; he placed the ball in the middle and said "now".
Psychological Statements	<u>Emotional</u>: He is sad; he is angry; he is glad. <u>Intrapersonal</u>: a) Simple motives: He wants to be the referee; he wants to keep the ball to himself; he wants to decide everything. b) Intentions: He is going to be the referee; he is going to divide them into teams; they are going to take the ball away from him. <u>Interpersonal</u>: a) Cognition of self: He felt left out; he thought he was the best; he thought he was the toughest of all. b) Cognition of other: He thinks they are unjust to him; they think he is too assertive. c) Interpersonal motives: He puts down the ball so that they can have it to play with; he kept the ball to himself so that they would not get it, and so he could decide the teams.

Results

Inter-rater reliability. For inter-rater reliability, 16 protocols were randomly selected, with the exception that four protocols were chosen from each grade, two from each sex. The percentage of agreement between the experimenter's and a second rater's blind ratings of action statements was 95%, and of psychological entities 89%.

Three-factor ANOVA. A three-factor ANOVA (with repeated measures on C) was performed for each of the social description categories. The structure of the ANOVA was 4 (grade) x 2 (sex) x 2 (global vs. specific actions) in the case of action terms; and x 3 (emotional, intrapersonal, and interpersonal cognitions) in the case of psychological entities. All significant F values are presented in Table 2, and are graphically represented in Figures 1 and 2. The mean scores of social description statements by grade are presented in Table 3.

Table 2. Summary of ANOVAs on the Use of Action and Psychological Descriptions

	Source of Variation	df	F	p
	Action statements:			
Social Description Category	Age	3,110	15.25	.01
	Age x subcategory	3,110	11.01	.01
	Psychological entities:			
	Age	3,110	9.20	.01
	Age x subcategory	6,220	6.55	.01

Table 3. Mean Scores of Social Description Statements by Grade

Social Descriptions	K	1	2	3
Action statements	5.3	7.8	9.0	8.8
Global actions	2.7	3.2	2.9	2.7
Specific actions	2.6	4.7	6.0	6.1
Psychological statements	4.5	4.6	5.8	6.8
Emotional states	2.4	2.0	1.7	1.7
Intrapersonal terms ..	1.7	1.8	2.4	2.7
Interpersonal terms ..	0.4	0.8	1.6	2.3

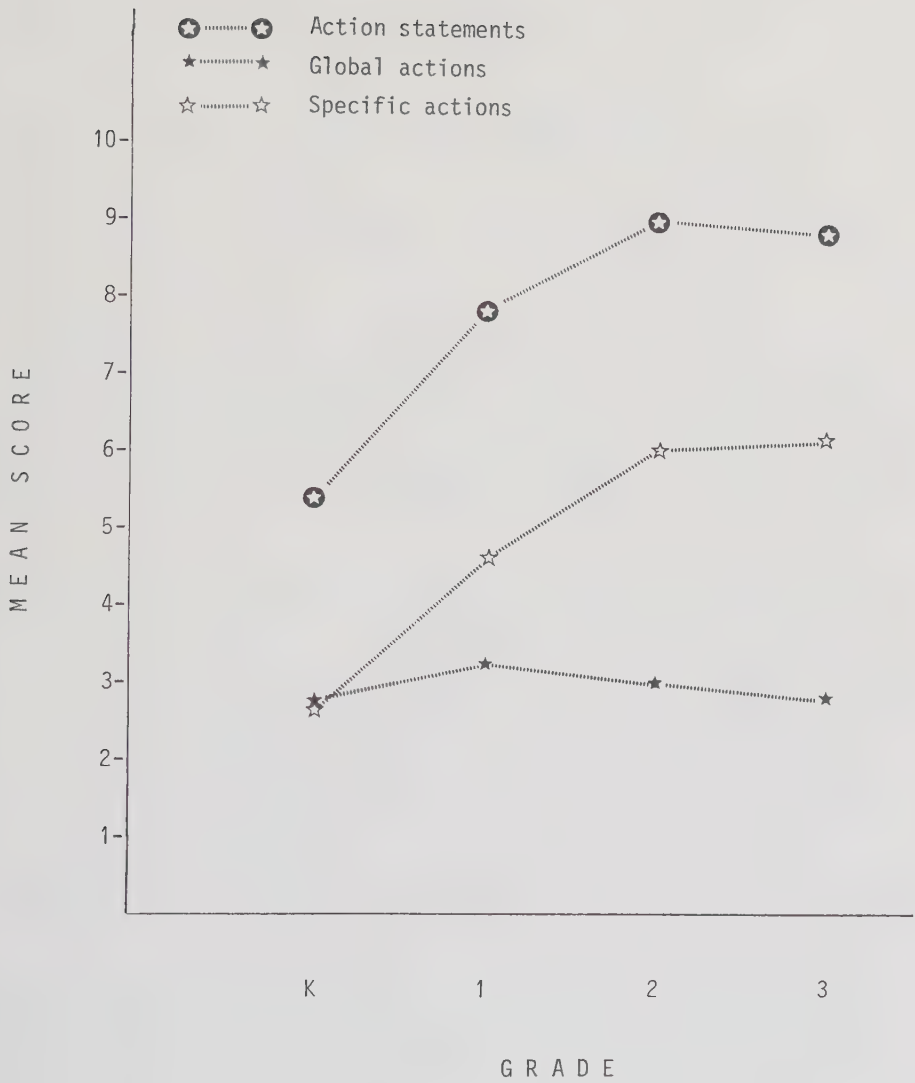


Figure 1. Mean score of action statements by grade

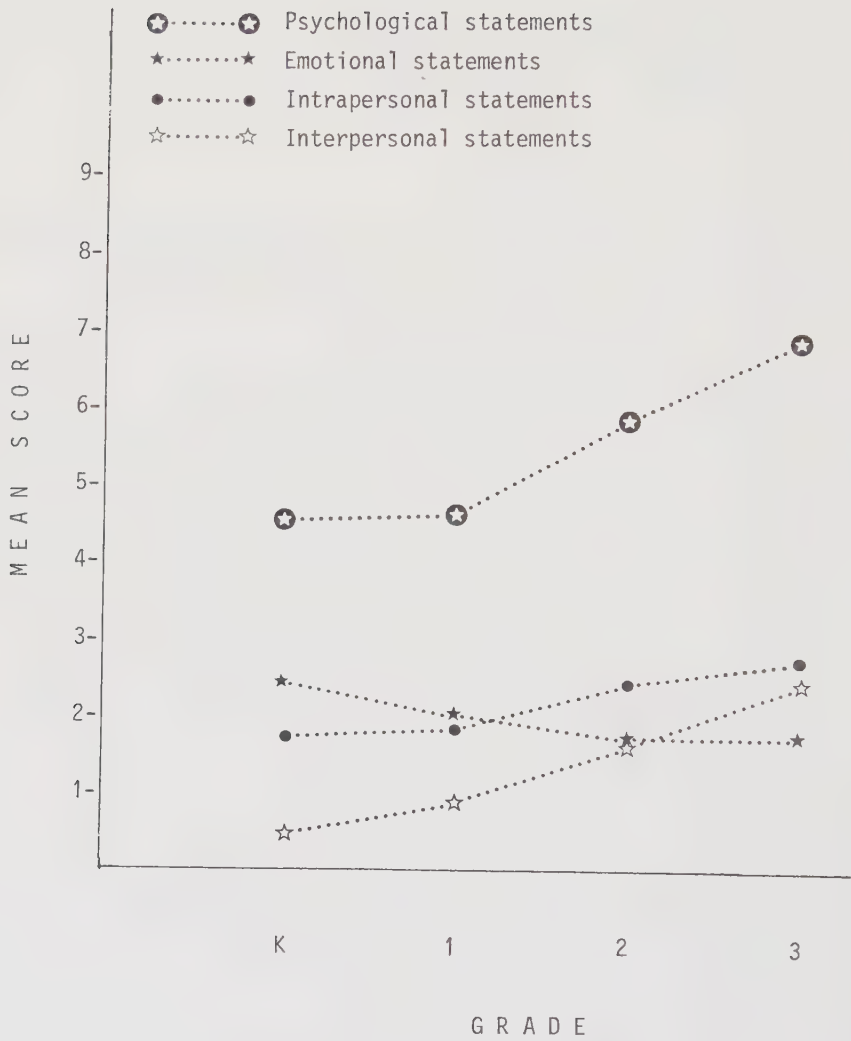


Figure 2. Mean score of psychological statements by grade.

Significant main effects were found between grades for both action and psychological descriptions, and for the interaction of age and subcategories. Scheffé's method of multiple comparison (Ferguson, 1981) revealed that, in the case of actions, there were significant mean score differences only between the kindergartners and the other grades respectively ($p < .01$, see Fig. 1).

The increase by grade is due to increase in specific descriptions only, since global action statements remained at the same level from kindergarten through third grade. A significant difference was found in the use of specific action descriptions between the first and the third grades ($p < .05$, see Fig. 1).

With regard to psychological descriptions there was no difference between the kindergartners and the first graders. The two youngest groups differed, however, from the second and the third graders ($p < .01$, see Fig. 2). A significant difference was also found between the second and the third graders ($p < .05$).

Regarding the subcategories of psychological entities, there was a tendency toward a reduction in the use of emotional description, and toward an increase in intrapersonal descriptions from kindergarten through third grade. Both, however, were non-significant, according to Scheffé's method. A conservative t-test, nevertheless, revealed a significant difference between the kindergartners and the first graders on one hand, and the third graders on the other ($p < .01$). Interpersonal descriptions increased significantly between the kindergartners and the second graders ($p < .05$), and between the first and the third grades ($p < .01$, see Fig 2).

Chi-square analysis. All subjects from kindergarten through third grade used approximately the same amount of global action statements when describing the social situation concerned (Table 3, and Fig. 1). The first graders used more specific action statements than did the kindergarten children, and significantly less specific descriptions than the third graders.

The two youngest groups differed only in terms of specific action statements, since they used about the same number of psychological entities; however, considering interpersonal descriptions only, a chi-square analysis

on the number of subjects in each of these two grades (who displayed minimal use of such descriptions) revealed a highly statistically significant increase between the two groups ($\chi^2_{(1)} = 10.6, p < .01$). Only 7 out of 33 in the youngest group used interpersonal cognitions, as compared with 19 out of 31 first graders. The number of subjects at each level of grade using vs. not using psychological entities and their subcategories are presented in Tables 4 and 5.

Table 4. Number of Subjects at Each Level of Grade Using vs. Not Using the Subcategories of Intrapersonal Descriptions.

Intrapersonal Descriptions	K	1	2	3
Not using	4	3	3	1
Using:				
Simple motives	11	12	8	8
Intentions	8	8	8	3
Simple motives and Intentions	10	8	8	15

Table 5. Number of Subjects at Each Level of Grade Using vs. Not Using the Subcategories of Interpersonal Descriptions.

Interpersonal Descriptions	K	1	2	3
Not using	26	12	6	2
Using:				
Cognition of self	3	5	4	1
Cognition of other	0	0	0	0
Interpersonal motives	1	12	11	11
Cognition of self and Interpersonal motives	3	2	5	8
Cognition of self, other and Interpersonal motives	0	0	1	5

The second graders did not use significantly more specific action statements than the first graders, but spoke significantly more in psychological terms. The increase in psychological descriptions was partly due to an increase in intrapersonal statements, but the main effect was due to an increase in interpersonal terms. The number of subjects using either simple motives or intentions alone and the number using both subcategories in combination did not differ between the grades ($\chi^2_{(3)} = 5.8$, $p > .05$, see Table 4). The number of subjects, however, using interpersonal motives in combination with cognitions of self and/or other descriptions (i.e., instead of only one of the subcategories) increased from kindergarten through third grade ($\chi^2_{(3)} = 8.9$, $p < .05$, see Table 5). Only 6 out of 118 subjects used descriptions referring to the cognition of other, 5 of them being third graders.

In sum it can be stated that, in terms of psychological descriptions, there was an increased tendency from the first grade through third grade toward more detailed description of the psychological import of the situation, especially regarding individual perspectives and interpersonal relations. The interpersonal cognitions were, however, restricted to thoughts and actions of one person in relation to others. They did not include the person's own thoughts about the thoughts and actions of other(s) in relation to himself.

Discussion

The results confirmed the expected trend of social behavior descriptions towards a higher degree of differentiation, and to involve more psychological entities with increased age in the age period of 5 to 9 years. In their description of social behavior, the kindergarten children seem to use global terms of actions and specific terms including goals and motives at an individual level, the individual being seen to act for himself only. The third graders seem to describe social behavior in more specific terms, emphasizing interpersonal motives and different individual perspectives. The individual is seen to act in relation to those with whom he is interacting. The individual is not seen, however, to consider the others views of the situation in relation to himself. This is in accordance with the findings of previous investigators. A form of social decentration seems to have its onset at about the age of seven, when the child becomes able to handle interpersonal cognitions.

Worth noticing is the finding that the increase in specific action descriptions precedes the increase in psychological terms. It suggests that, with growing ability of perceiving specific aspects of an individual's behavior in a social situation, the child subsequently becomes able to infer interpersonal motives and cognitions. The child, then becomes capable of assigning meaning to social behavior, with the whole behavioral sequence as a basis, and is not restricted to the immediate action in making inferences.

The results support Piaget, and Feffer and other investigators mentioned above, in that the preschool child, not being capable of reversible transformations, cannot deal with multiple aspects of a situation. The preschooler's social reasoning is transductive proceeding from particular to particular. The older child considers the whole behavioral sequence involving both anticipation and retrospection. The study suggests that the transition from transductive social reasoning to a form of operational thinking is enhanced by the child's growing ability to consider more and more specific actions which subsequently leads to an ability to consider both purpose and antecedents of observed actions. The preschooler is not unaware of the psychological meaning of actions, but can assess intentions, motives, and emotional reactions. Similar findings have been reported by other investigators (e.g. Borke, 1971; Mossler, Marvin, & Greenberg, 1976; Berndt, 1977). However, the young child's ability to assess psychological entities is restricted and limited to single causal reasoning. The older child is capable of assessing multiple psychological processes on the basis of multiple actions.

The above findings refer predominantly to the way children describe social behavior, and not to their understanding. Obviously, the former is dependent on the latter, but it is possible that young children understand more than they can express verbally.

It can be concluded, that the study provides further evidence of the developmental changes usually found in studies concerning social understanding in young children. The preschooler is found to depend more on centered strategies than the elementary school child. The study also suggests that the developmental progress made in the age period under consideration is a matter of growing ability to abstract more and more action units from the ongoing stream of behavior. It suggests that the process of social under-

standing involves two interdependent aspects: (1) The perception of actions including a progressive differentiation of stimuli; and (2) The coordination of action units involving reference to multiple psychological processes behind observed actions.

The present study suggests a developmental sequence as follows: First we are to expect a global cognition of both actions and psychological states. The next step involves a growing capacity for perceiving meaningful actions pertaining to simple motives and intentions at an individual level, the inference of psychological entities being restricted to the target person's immediate actions. As the ability to perceive meaningful actions increases, so the ability to coordinate actions and to infer interpersonal cognitions begins to make its appearance. The making of inferences, then becomes more advanced and the assumed causality behind actions becomes multiple. From the present study, the onset of interpersonal cognitions in social behavior descriptions would seem to occur at the age of seven, which coincides with the shift from preoperational reasoning to concrete operational reasoning in Piagetian terms.

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PSYCHOLOGICAL RESEARCH BULLETIN

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*Young Children's Understanding
of Interpersonal Behavior*

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A b s t r a c t. - Studied Cognitive understanding of interpersonal behavior in 100 children, five to eight years old, who observed the same social situation on video-tape. The aim was to examine the subjects' ability to assign meaning to given social behavior in an interpersonal situation containing multiple contextual and behavioral cues.

The results suggest that this ability of social inference making is a skill that seems to emerge between the ages of six and eight, and consists of a progressively developing capacity for differentiating and coordinating multiple contextual and behavioral cues.

The aim of this study has been to examine and compare, in children between the ages of five and eight, their understanding of interpersonal behavior in a given social situation. The emphasis has been on their comprehension of ongoing action, and on finding out which behavioral and situational cues they rely on for this purpose.

The findings of research into children's social reasoning with regard to role taking (Shantz, 1975), and causal attribution (Sedlak & Kurtz, 1981), suggest that the capacity of young children for dealing cognitively with social situations containing a multiplicity of factors is limited, and that it undergoes rapid change during their elementary school years.

Research on children's role taking behavior shows that preschoolers are poorer perspective takers than older children in all respects, since they can neither differentiate individual perspectives nor coordinate them (Feffer & Courevitch, 1960; Chandler & Greenspan, 1972; Shantz, 1975; Selman, 1980). Nevertheless, the preschoolers are not incapable of affective, cognitive, and spatial perspective taking, though they are more restricted and more stimulus bound than elementary school children (Börke, 1971; Mossler, Marvin, & Greenberg, 1976; Gove & Keating, 1979; Flavel, Flavell, Green, & Wilcox, 1981).

Research on children's causal attribution shows that young children are able to view human behavior in causal terms. They are capable of causal understanding, both with regard to actions (Berndt, 1977), and emotions (Green, 1977). They are only able to manage multiple causal relations, however, when the causes are both facilitative and related in terms of an additive rule. Only after the age of seven do children gain the ability to apply multiple causal schemata. (Karniol & Ross, 1976; Kun, 1977; Cohen, Gelfand, & Hartman, 1981; Sedlak & Kurtz, 1981).

This study differs in approach from traditional research in social perspective taking and causal attribution, in that it is the understanding of ongoing action that is emphasized here, rather than perspective taking skills or the identification of possible causes. This approach should be a useful complement to the traditional ones.

Heider (1958) has suggested that people assign meaning to behavior by a reference to psychological aspects within the performing actor. A person is seen as an actor, and his behavior - with its overt characteristics such as facial expression, bodily posture, and movements - is viewed in relation to the actual situational context. Assigning meaning to behavior requires the observer to take into account both the behavioral and situational cues with which it is assumed the actor is faced. In other words, the observer must take the role of the actor, by making inferences about his psychological make-up in terms of thought, feelings, and motivation.

According to Heider's assumption, children's understanding of social behavior should embrace both the ability to take perspectives and that of making causal attributions. Since differences have been found in role taking abilities and causal reasoning in children between the ages of five and nine, it is proposed here that similar differences should be found in their understanding of social behavior.

The method used in this study is somewhat similar to Selman's dilemmas (Selman & Byrne, 1974), except that here the focus is on the subjects' interpretation of ongoing action and not on multiple perspective considerations. A real situation is presented on a video-tape, showing a girl faced with two situational dimensions. The subjects are to assess the girl's actions, thoughts, and feelings in the situation, in particular a given verbal

action performed by the girl. It is assumed that the preschoolers will have trouble in making the girl's verbal action intelligible because of their inability to coordinate multiple stimulus cues adequately, whereas the older children will view her behavior in terms of the multiple situational context.

Method

Subjects. The subjects were 100 middle-class children between the ages of five and eight, divided by age into four groups as follows: 22 five year-olds (10 boys and 12 girls), 29 six year-olds (13 boys and 16 girls), 25 seven year-olds (13 boys and 12 girls), and 24 eight year-olds (12 boys and 12 girls). The mean ages were 5.6, 6.7, 7.6, and 8.7 years respectively; in no instance did the age range of children from adjacent groups overlap.

The video-scene. The children watched a videofilm of a real situation where two children are interacting at a day-care center. A teacher, who can be heard but not seen, is also important in the situational development. The scene starts by showing a boy and a girl fighting. The teacher tells the children to stop fighting. They stop and stand facing each other without moving. The girl says: "I'm stronger than you are". The boy then attacks the girl and the fight starts again. The boy is wearing glasses and frequently uses one hand to hold them, while fighting with the other. The girl fights with one hand and reaches for the boy's glasses with the other. Finally the girl hits the boy hard on the hand he uses to hold his glasses. The boy stops fighting. He goes off crying and saying: "Look what you have done to my glasses". The girl stands motionless with her face turned toward the boy. The teacher's voice is heard saying: "Come and show me your glasses. Let me look at them. Maybe I can fix them". The boy replies: "I have already fixed them myself". The girl, turning her head toward the teacher, says: "This thing with the glasses - I didn't do it on purpose". Then she looks at the boy again. The boy leaves the room.

Equipment. The video-scene was presented in black and white on a 13-inch television monitor with full sound. The children's descriptions and answers were audiotaped.

Procedure. The children were tested individually. They were told that they were to watch one short film on television showing a boy and a girl quarreling with each other. They were instructed to watch the film carefully, paying special attention to the girl, and were encouraged to take her role. The children watched the film twice. After the first presentation, the children were asked to describe what happened so that the experimenter could assure himself that the events of the scene were satisfactorily accounted for (any difficulties encountered in any child's recollection of the situation being resolved by the experimenter in casual discussion). The purpose of the second presentation was to examine the children's view of the girl's feelings, thoughts, and intentions in relation to her verbal behavior. The film was stopped on two occasions; first, shortly after the beginning, while the girl and the boy were still fighting, and, secondly, at the end when the girl had stated that she had not done it on purpose, and while she stood motionless looking at the boy. On both occasions, the children

were asked: "How does the girl feel?"; on the second occasion, they were also asked: "Why did the girl say what she said about the glasses?", and "What did she mean by it?".

Scoring procedure. Each child's set of answers were scored according to a 3-level system, where the levels represent different degrees of stimulus cue considerations applied in the interpretation of the girl's verbal behavior. Thus, level 1 scores denote failure to understand the verbal behavior in relation to the multiple contextual cues; level 2 - interpretation of the action in terms of only one of the two stimulus dimensions; and level 3 - taking into account both the stimulus dimensions (i.e. concerning the boy in the scene and the teacher). In addition, the answers were categorized with respect to which of the two stimulus dimensions was emphasized.

R e s u l t s

The results are presented in Table 1. The data were subjected to chi square analysis. The number of subjects at each age level who scored in accordance with a given level of social reasoning were compared. In line with the hypothesis, a highly significant developmental change in social behavioral understanding was found between the age groups, $\chi^2_{(6)} = 30.77$, $p < 0.001$. A statistically significant difference between pairs of adjacent age groups was found only in comparing the five and six year-olds, $\chi^2_{(2)} = 6.34$, $p < 0.05$, the difference apparently dependent on the frequency of their level 3 answers; about one fifth of the five year-olds attained level 3, as compared with one half of the six year-olds. A chi square analysis of subjects attaining vs. not attaining level 3, showed a significant increase with increasing age, $\chi^2_{(3)} = 20.09$, $p < 0.001$; and a significant difference between the five and six year-olds, $\chi^2_{(1)} = 6.03$, $p < 0.02$. Scorings in terms of level 1 decreased with age, $\chi^2_{(3)} = 23.18$, $p < 0.001$, with a significant difference between the adjacent groups of six and seven-year-olds, $\chi^2_{(1)} = 4.13$, $p < 0.05$. No difference between the age groups was found in regard to level 2, $\chi^2_{(3)} = 3.34$, $p > 0.3$.

The most frequently used set of answers among the five year-olds fell into the category of level 1 (64%). In the other age groups, level 3 answers were the most frequent. Among the six year-olds, one half of the children used level 3 answers, and the other half used level 1 answers. Only two six year-olds used level 2 answers. Sixty percent of the seven year-olds reached level 3, and 83% of the eight year-olds (see Table 1).

Table 1. The number and percentage of subjects reaching a given level of social reasoning at each level of age.

Age	N	Level 1		Level 2		Level 3	
5 yrs	22	14	64%	4	18%	4	18%
6 yrs	29	12	41%	2	7%	15	52%
7 yrs	25	4	16%	6	24%	15	60%
8 yrs	24	1	4%	3	13%	20	83%
Sum	100	31	31%	15	15%	54	54%

Because the set of answers scored in terms of level 1, although failing to refer to multiple contextual cues, included some understanding of the girl's emotional state, it was found necessary to subdivide level 1 answers into two categories: Level 1 (a) - where the girl is described as fighting, and as angry throughout the situation; and level 1 (b) - where the girl is viewed as angry at first, but then judged to become affected by what happened to the boy (to feel sad). The frequency of the two categories at each level of age is presented in Table 2. A statistically significant decrease was revealed between the five and six year-olds with regard to level 1 (a), $\chi^2_{(1)} = 4.94$, $p < 0.05$. Twelve subjects scored according to level 1 (a), eight of whom belonged to the youngest group of five year-olds. No difference was found in level 1 (b) scorings between the five and six year-olds. Among the seven and eight year-olds, only four subjects answered in terms of level 1 (b), whereas 15 did so in the two younger groups. A comparison of, on one hand, the five and six year-olds, and the seven and eight-year-olds, on the other, revealed a highly significant difference, $\chi^2_{(1)} = 7.55$, $p < 0.01$.

In level 2, the scores present a recognition of the girl's feelings regarding what happened to the boy. The girl was described as "sad", as "feeling sorry for him", or "ashamed". Her verbal behavior was understood in relation to one attributional dimension involving only the girl and the boy as an attempt to make a change in the boy's emotional state from sad to glad.

This level was used by only 15 out of 100 subjects, and as already mentioned no difference was found between the age groups.

Table 2. The number of subjects scoring in terms of the subcategories of level 1 at each level of age.

Age	N	Level 1 (a)	Level 1 (b)
5 yrs	14	8	6
6 yrs	12	3	9
7 yrs	4	1	3
7 yrs	1	0	1
Sum	31	12	19

In level 3, the girl is judged to be aware of the multiple aspects of the situation, and to react cognitively and emotionally to these. Her verbal behavior is explained, however, in terms of only one of the two attributional dimensions. Of the 100 subjects, as many as 54 scored on level 3, of whom two saw the girl's statement ("I didn't do it one purpose") as being an attempt to make up with the boy, whereas 52 interpreted it as an attempt to forestall the teacher's anger; of these 52, nine subjects (who did not represent any particular age group) differed from the rest in that they did not describe the girl as being emotionally affected by what happened to the boy.

In no respect was there any difference between the sexes.

Inter-rater agreement. For inter-rater agreement, 24 protocols were selected randomly, except that six protocols were chosen from each age group, three from each sex. The inter-rater agreement was 92%.

Discussion

The approach used here is focussed on children's cognitive organization of ongoing action, the relevance of which, within the developmental study of

social inference making, is largely supported by the findings. It was confirmed that a developmental change in the manner in which children assign meaning to ongoing interpersonal behavior occurs between the ages of five and eight years, a change which corresponds to those found in both role taking and causal attribution.

This study supports the view that the understanding of a person's behavior involves the identification and coordination of both contextual and behavioral cues with a reference to psychological processes. This means that a person's inner state in a social situation is inferred from his behavior, and from the situational forces he is facing. Thus it can be concluded that the understanding of ongoing behavior is an integral part of the process of social understanding as a whole, and as such should be included in research in this field.

Some of the five and six year-old children in the study were unable to understand the verbal behavior of the girl in the scene in terms of interpersonal relations, because they failed to relate it to the multiple contextual cues of the situation; accordingly, they were not able to infer thoughts, feelings, or intentions from the girl's verbal behavior, which seemed quite meaningless to them. In children between the ages of six and eight, the study found a growing ability to assign meaning to the verbal behavior as interpersonal behavior integral to a multiple social stimulus situation. It seems that the prerequisite for understanding interpersonal behavior is the capacity to operate with multiple stimulus cues.

The children reaching level 3 in the study were able to view the girl as reacting to situational forces facing her from two sides: 1) what happened to the boy; and 2) the presence of the teacher. From her behavior, level 3 children inferred that she was aware, not only of the effect of her own action toward the boy had on him, but also of the effect it had on the teacher's view of her. She is thus seen to act with a view of changing the teacher's view of her. This form of social reasoning coincides with Selman's (1980) level 2: Self-reflective/second person and reciprocal perspective taking. As Selman found, reasoning at this level is not fully accomplished before the age of seven.

In level 3 scorings, the girl's verbal behavior was explained by all but two of the subjects by attributing to factors relating to the teacher, and not to the boy. No subjects used both of these possible causes. The reason for this may be that the children rely on the discounting principle which, according to Sedlak and Kurtz (1981), develops at the age of seven. On this principle, children attribute one adequate cause to behavior and make no inferences about alternative causes. This is not to say that the level 3 children viewed the girl as not being affected by what happened to the boy (because they all recognized that she was), but perhaps that factors relating to the teacher represent a stronger attributional dimension than those relating to the boy because of learned expectations. Children learn that a given type of situation gives rise to certain possible consequences. The presence of the teacher in the scene, and that he is addressing his attention to the boy, may give rise to expectations in the child observer with regard to the teacher's disapproval directed toward the girl. It is probable that the teacher represents a social authority and that, as such, the children attribute to him rather than to the boy.

Children scoring in accordance with level 2 failed to relate the girl's verbal behavior to the multiple contextual cues of the situation. They did, however, succeed in relating her actions to the contextual dimension of the boy, while the teacher was overlooked. The girl is conceived of as being aware of the boy's emotional state - as being empathetically affected, and as being motivated to cheer him up again, but she is not seen to think of herself as the object of a second person's actions, thoughts, or feelings, as in level 3. Instead, at level 2 it seems that the assessment of the girl's verbal behavior is restricted to the emotional aspects of the immediate situation.

The children of level 1, who showed no understanding of the girl's verbal behavior, were capable of affective perspective taking, in which two types of affective judgments were discernible. By some of the subjects at this level (level 1 a children), the girl was described as angry throughout the situation, and by others (level 1 b children), as angry but also as being affected by what happened to the boy in that she became sad. It is possible that the children at this level, in line with the view of Gove and Keating (1979), view the subjective feeling as a part of the situation itself. This means that an objective situational event has a subjective emotion attached

to it, and these two aspects are not differentiated. Role taking, then, consists of reading off the affective aspect of the situational event.

This suggests, that the level 1 b children, who conceived an emotional change exhibit a higher degree of differentiation in their view of the social situation, than the level 1 a children. The former group's failure to see the girl as being affected by what happened to the boy may have been due to the children's inability to decenter - they are unable to relinquish their initial view of the girl, despite the change in the situation.

Another possible explanation is that the preschoolers do not recognize any change in the situation - at least no change relevant enough to alter the subjective feeling of the target person. This may be related to the findings of Viborg (1982), that young children view social situations in a very global manner. Children falling into level 1, in this study, view the girl as angry "because they were fighting", and the cause of her verbal behavior "because she is angry", or "because they were fighting". All of this supports the assumption that the situation is conceived of as a global and unitary complex.

Consistent with the findings of Borke (1971) and others, level 1 answers indicate that the preschooler is aware that other people have feelings, and that their feelings vary according to the situation in which they find themselves. Such awareness may be the precursor of more advanced social inference making, but at this stage it does not involve genuine role taking or social inference making, since the psychological import of a person's behavior is not yet understood in terms of the thoughts, intentions and feelings associated with that person's own frame of reference.

To sum up, these results suggest that assigning meaning to interpersonal behavior consists of cognitive inference making about psychological entities on the basis of multiple situational and behavioral cues. This form of inference making is a progressively developing skill, that includes a growing ability to differentiate and coordinate cues of the situation and the behavior of those involved. Only after the age of seven, do children gain the ability to understand interpersonal behavior by relating it to multiple situational and behavioral cues. This coincides with the development of concrete operational thinking according to Piaget's theory.

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PSYCHOLOGICAL RESEARCH BULLETIN

XXIV: 1 1984

*Children's Identification and Coordination
of Inconsistent Behavioral and Expressive Cues
in Pretense Behavior*

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A b s t r a c t. - Studied cognitive understanding of pretense behavior in 95 children divided into groups of preschoolers, first-graders, and third-graders, who observed the same social situation on video-tape. The aim was to examine the subjects' ability to assign meaning to given social behavior containing inconsistent behavioral and expressive cues. The results suggest that the capacity to identify and coordinate adequately the inconsistent behavioral and expressive cues in pretense behavior is not fully attained before the age of nine. Younger children fail to operate with multiple inconsistent cues, and view pretense behavior in terms of only one of the two inconsistent stimulus dimensions and interpret it as non-pretensive.

I n t r o d u c t i o n

In a series of studies by the present author (Viborg, 1982, 1983, 1984), five to nine-year-old children's understanding of behavior has been examined. The theoretical orientation has been the Heiderian view (Heider, 1958), that perception of ongoing social action involves inference making about inner psychological entities on the basis of such behavioral cues as facial expression, bodily posture, and movements, on one hand, and contextual cues involving social situational forces, on the other.

The findings of these studies suggest that children's capacity for drawing conclusions based on multiple stimuli is essential to the process of making social behavior intelligible, especially if it is to be understood in terms of interpersonal relations, and that this capacity is not fully attained before the age of seven. Preschoolers were found to view behavior in terms of individual psychological motives and intentions, and to be unable to understand interpersonal actions. From the age of seven onwards, children showed evidence of being capable of interpersonal cognitions with multiple psychological import when assigning meaning to behavior. The findings also suggest that the cognitive understanding of ongoing action, and the capacity

for role taking and for causal attribution, are all integral parts of the same process of social inference making, a conclusion supported by the results of other work in all three fields.

In the field of role taking, preschoolers have been found to be able to identify affective states in other people, and to recognize that these inner states may vary with the situational context (Borke, 1971). Furthermore, Mossler, Marvin, and Greenberg (1976) have shown by using videotaped stories, that children as young as four or five years of age are able to engage in conceptual perspective taking. However, it is not until the age of seven, that children can take the perspectives of others when such perspectives differ from their own, and are able to coordinate multiple perspectives (Chandler & Greenspan, 1972; Shantz, 1975; Kurdek, 1977). According to Selman (1980), it is only after the age of seven, that children become able to take a self-reflective or second-person perspective on their own thoughts and actions. Not until they have reached this stage can children conceive of an observed person's inner state as being complex.

Sedlak and Kurtz (1981), who reviewed empirical work on children's causal reasoning, found that children as young as five years of age are able to use multiple causal reasoning when judging social behavior, provided that the causal relations are simple and additive. Young children tend to use an additive form of causal reasoning, even when the actual causes have non-additive relations as, for instance, in ability and effort attributions of performance (Kun, 1977), where preschoolers assume a direct relation to exist between effort and ability. In contrast, children more than seven years old reasoned that a small amount of effort reflects a high degree of ability. Even in the attribution of causes for prosocial behavior in the presence of an extrinsic facilitative cause (i.e., a reward or command) preschoolers applied a more primitive form of reasoning than did older children (Karniol & Ross, 1976, 1979; Cohen, Gelfand, & Hartman, 1981). In such situations, preschoolers do not discount plausible intrinsic causes for prosocial behavior as do older children. Instead, the presence of external facilitation makes the younger children presume an increased contribution of the internal cause.

Common to the empirical work in the fields of research mentioned above is the interpretation of results in terms of Piaget's theory of cognitive de-

velopment. Young children's limitations with regard to perspective taking and causal attribution are interpreted as a consequence of their egocentrism and inability to decenter. Likewise, the elementary school child's growing capacity for operating with multiple stimulus cues in social situations is viewed in terms of concrete operational functioning.

The purpose of the present study is to examine further children's understanding of ongoing actions, the emphasis now being placed on the understanding of behavior with inconsistent behavioral and expressive cues. Sedlak and Kurtz (1981) show that, in the elementary school years, there is a growing ability to apply causal schemata of increasing formal complexity. About the age of nine, for instance, children become able to operate with inverse causal relations, something which younger children do not manage. And in the area of role taking, Greenspan, Barenboim, and Chandler (1976) found that children less than nine years old have trouble in making emphatic judgments in an inconsistent social stimulus situation. It was found that third-graders were able to make inferences based on multiple inconsistent cues, whereas first-graders based their judgments on consistent cues only.

In line with findings, in the fields of both causal attribution and role-taking, that stimulus cues with inverse relations cannot be accounted for by children under the age of nine, it is to be expected that the identification and adequate coordination of inconsistent behavioral and expressive cues in pretense behavior is not fully attained before that age.

The method consists of a video-scene presenting a real situation where the social behavioral sequence to be judged is performed by a boy who displays aggressive, threatening behavior toward a girl, both in words and in his physical actions (behavioral cues), but who has, at the same time, a positive facial expression (expressive cues). Adults who have observed the scene see a happy boy pretending to be angry, and who only wants to put on a show for the girl.

It is hypothesized that preschoolers and early elementary school children will tend to view the behavioral sequence in terms of only one of the two stimulus dimensions, thereby failing to see it as pretense behavior. Third-graders, on the other hand, should be able to identify all the relevant cues and to interpret them in a manner similar to that of adults.

Method

Subjects. The subjects were 95 middle class children divided into groups of preschoolers, first-, and third-graders. The number of subjects in each group respectively was 32 (18 boys and 14 girls); 34 (18 boys and 16 girls); and 29 (19 boys and 10 girls). In order the mean ages were 5.8; 7.7; and 9.8.

The video-scenes. The children watched a videofilm of a real situation taken at a day care center. One boy and two girls, aged 6 years, appeared in the scene, though one of the girls was more of an onlooker than an active participant. The scene begins by showing a boy and a girl chatting. A second girl appears and gets their attention. She makes a gesture with both her hands and asks the other children to guess what it represents. The boy starts guessing: "Is it a flower?"; "is it a hedgehog?". The girl answers "no" to all his guesses. The boy then says: "tell me what it is". As the girl is unwilling to reveal her "secret", the boy begins to threaten her. "If you don't tell me what it is I'm gonna hit you", he says, and shakes his fist in her face. "No you won't", the girl replies; "Yes I will", the boy threatens again. Then he clenches his fist, throws a punch very near the girl's face, but without actually touching it, and immediately, retracts his hand and smiles.

Procedure. Each subject was examined individually. The subjects were informed that they were to watch a brief story on television about children playing together, and that they were to answer a few questions afterwards. The subjects were told in advance that the scene would be about a girl who makes a gesture with her hands that is supposed to represent something, and about a boy who tries to guess its meaning. The subjects were told to pay special attention to the boy and his behavior. Afterwards subjects were asked to describe what happened, and later a series of questions were asked about the boy: (1) What did the boy do? (2) What were his facial expressions? (3) What did he intend? and (4) What was he feeling? Questions were omitted if already answered by a subjects earlier description.

The video-scene, watched by subjects on a 13-inch television monitor, was presented in black and white with full sound. The subjects' responses were audiotaped.

Scoring procedure. The responses of the subjects were scored according to a three-level system, in which levels represent different degrees of stimulus cue consideration. The scoring system was structured thus: Level 1 - where only the consistent behavioral cues are considered. Level 2 - involving identification of both the behavioral and expressive cues in the boy's actions, but failure to coordinate them into a meaningful conception. Level 3 responses include a consideration of all relevant cues and a meaningful coordination of them.

In the scene, not only are the salient features of the boy's behavior (both his verbal message and physical action) negative, but there are additional contextual factors that foster negative expectations about the situational development, since the girl in the scene refuses to tell the boy what he wants to know. The positive features of the behavioral sequence are the facial expressive cues, and the fact that the boy does not actually hit the girl. Furthermore, the situational context also tends to support a positive view of the scene, since it concerns a play situation.

Considering the number of cues in the scene, it is to be expected that the subjects' responses will vary with regard to content, which means that each level can include different subcategories. Therefore, the set of answers from each subject were subjected to content analysis.

Content analysis. The subjects' responses were analyzed for content in accordance with the 3-level scoring system. Within level 1, three categories of answers were found: (a) The boy is seen to have hit the girl, to have angry feelings, to have bad intentions, and to have an angry face (b) The boy's actions are interpreted as an attempt to hit the girl. He is seen as angry with angry face, and to have bad motives. The reason for not actually hitting is unknown (c) Includes a set of answer identical to the b answers, except that the reason for not hitting is judged to be internal constraints, such as "he didn't dare to".

The set of answers falling into level 2 consist of two categories: (a) The boy is seen to have hit the girl, and to have bad motives. Positive cues are recognized either in his feeling or in his face or both (b) The boy is described as having tried to hit the girl, but the reason why he did not actually do so is unknown. The boy is judged to have bad motives, but positive aspects are recognized either in his feeling or his face, or both.

Within level 3, three categories were found: (a) The boy is described as having tried to hit the girl and to have bad motives. The reason for not hitting is: "He did not dare to hurt her. He only looked glad so that the girl would not know how angry he really was" (b) The answers of this category are the same as in category (a) level 3, except for the reason for not hitting: "He changed his mind. He did not really want to hurt her". (c) The boy is judged to be pretending or putting up a show. He is seen as glad and having good intentions.

R e s u l t s

Inter-rater agreement. For inter-rater agreement, 12 individual sets of answers were selected randomly, with the exception that four were chosen from each grade, and two from each sex. The inter-rater agreement was 95%.

Chi-square analysis. The number of subjects falling into each level of social behavioral assessment at each level of grade are presented in Table 1. Chi-square was used for statistical analysis. A statistically significant difference was found between the groups' responses in terms of the three-level scoring system, $\chi^2_{(4)} = 45.74$, $p < .001$. There was a significant difference between pairs of adjacent groups, both in the comparison of preschoolers and first-graders, $\chi^2_{(2)} = 9.49$, $p < .01$, and in the comparison of the first-graders and third-graders, $\chi^2_{(2)} = 19.37$, $p < .001$.

Table 1. The number and percentages of subjects reaching a given level of social behavioral assessment at each level of grade.

L E V E L	G R A D E					
	Pre-schoolers		First-graders		Third-graders	
Level 1 (a)	12		8		3	
(b)	7		6		0	
(c)	2		2		1	
(a+b+c)	21	66%	16	47%	4	14%
Level 2 (a)	3		1		0	
(b)	7		6		0	
(a+b)	10	31%	7	21%	0	0%
Level 3 (a)	0		1		3	
(b)	0		5		5	
(c)	1		5		17	
(a+b+c)	1	4%	11	32%	25	86%
Total	32	100%	34	100%	29	100%

The frequency of level 1 and level 2 answers decreased with age, $\chi^2_{(1)} = 11.17$ and 9.29 respectively, $p < .01$, whereas that of level 3 answers increased with age, $\chi^2_{(1)} = 23.57$, $p < .001$.

The application of chi-square in testing the significance of the differences in the proportional frequency of the subcategories between age-groups revealed no significant differences, the greatest difference being between first-graders and third-graders in the use of category (c) of level 3. Five out of 11, or 45%, of the first-graders used sets of answers falling into level 3 (c), whereas 17 out 25, or 68%, of the third-graders used that category, though the difference was not statistically significant.

Discussion

The results show that assigning meaning to a person's social actions with inconsistent behavioral and expressive cues can be too difficult a task for children less than nine years old. The present study is restricted to only one situation and one behavioral sequence, and thus it is possible that in some other situation, with a different behavioral sequence to be judged, children under nine might manage such a task. Since, however, the present findings are in accordance with those of research in causal attribution mentioned earlier (Kun, 1977; Sedlak, & Kurtz, 1981), and in role taking (Greenspan, et. al., 1976), it may be concluded that the capacity for identifying and coordinating the multiple stimulus cues of a person's behavior affects the manner in which his behavior is interpreted, and that the capacity for forming a conception of behavior containing inconsistent cues is not fully attained before the age of nine.

Only the third graders in the study were fully capable of forming a conception of the behavioral sequence of the video-scene containing all the relevant cues from both of the inconsistent stimulus dimensions, by making all cues fit together. The coordination of relevant cues in level 3 answers fell into three different categories. In the first category the target person was still viewed as hostile and angry, but the smiling behavior is made to fit into the scene by interpreting it as a way of deceiving the girl at whom his actions are directed. The target person is viewed acting glad in order to conceal his anger. Only 11% of the level 3 answers fell into this category.

About 30% of the level 3 subjects viewed the target person in negative terms at the beginning of the scene, but inferred from the smiling behavior a change in internal motivation, from negative to positive. The most frequent set of answers of level 3 presented a view of the target person as happy, and only pretending to be hostile.

Whether the three different categories of level 3 represent different levels of cognitive capacity was not established in the present study. There was, however, a difference between the first-graders and third-graders in this aspect, the third-graders using category (c) of level 3 more often than first-graders, though the difference was not statistically significant. On

the basis of this, it may be assumed that level 3 (c) requires a more advanced form of cognitive functioning than the other two categories of level 3, but this can only be ascertained by further research.

Children who had not reached level 3, and thus were not able to interpret the boy's behavior in terms of all the relevant cues did, nevertheless, assign meaning to it, though their inference making was based only on limited aspects. Two thirds of the preschoolers and about half the first-graders interpreted the video-scene in negative terms only. Any positive cues, such as the smiling behavior of the target person, were ignored or overlooked. The children's reactions seem to be centered on the most predominant feature of the situation. The situation as a whole, then, is judged on the basis of these features. This is in accordance with the Piagetian view that young children are unable to decenter their attention from the most striking feature of the object of their reasoning and focus it on another aspect.

It has been suggested by Gove and Keating (1979), that young children have trouble in differentiating between a person's subjective feeling and his behavioral expression in a given situation. Feelings are simply a part of their external referents. According to this, the children of the present study who viewed the situation in negative terms only, focused on the aggressive act, and then simply described the internal elements conventionally supposed to accompany such an act. Seen from this angle, the children's social judgment at this level is not a form of inference making.

It is also possible that the young child's social judgment, centered as it is on single aspects of a situation, does involve social inference making. Sedlak and Kurtz (1981) found evidence of causal inference making in young children, according to which multiple causes were related in terms of an additive rule. Kun's (1977) "halo-schema", where ability and effort are positively related at a constant level of performance, is a good example of such inference making. The young children in Kun's study, when faced with effort/ability judgment task involving two persons who perform equally well, assumed that the person with more ability used more effort. The essential thing here, however, is that there is always a positive relation between what is inferred and the object from which the inference is made.

Possibly the social inference making of those children in the present study, who described the target person as angry and having bad motives, is governed by some additive principle. The focus of the children's attention was the target person's aggressive act from which all inferences were made.

The situational context may also lend support to a negative interpretation, since the boy of the scene does not get the information he wants from the girl; indeed, many of the subjects described the boy as angry "because the girl would not tell him what it was", in which case the boy's behavior is viewed as an act of revenge or "paying back".

In about half of the children with a centered view of the situation, the emphasis on the aggressive act was so great that they described the target person as having hit his victim, though he did not actually so do. The other half of the children saw that he did not actually hit, but still described him as angry and with bad intentions.

Children, whose answers fall into level 2, recognized positive aspects either in the target person's face, or both in his face and feelings. Nevertheless, the recognition of positive elements did not modify the view of the target person as having hostile motives. For instance, the target person could be described as having tried to hit the girl, as having a bad intention, as feeling angry, but as having a happy face; or he could be described as having tried to hit the girl, as having bad intentions, but as feeling happy with a happy face. There seems to be an imbalance in social judgment at this level. Possibly, even though positive aspects are recognized in the behavioral sequence of the target person, children are unable to set aside their initial assumptions based on the negative aspects; consequently they fail to realize that their view is based on incomplete information.

It has been established in the present study that assigning meaning to a person's action is a form of cognitive construction, and that it differs from one level of cognitive development to another. The interpretation of actions seems to be governed by the cognitive capacity to identify and coordinate multiple stimulus cues, a conclusion that agrees with Piaget's theory (Inhelder & Piaget, 1958), that only during the period of concrete operations do children manage to deal with multiple cues in their reasoning.

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